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THIS ISSUE CONSISTS OF TWO PARTS. THIS IS PART 1

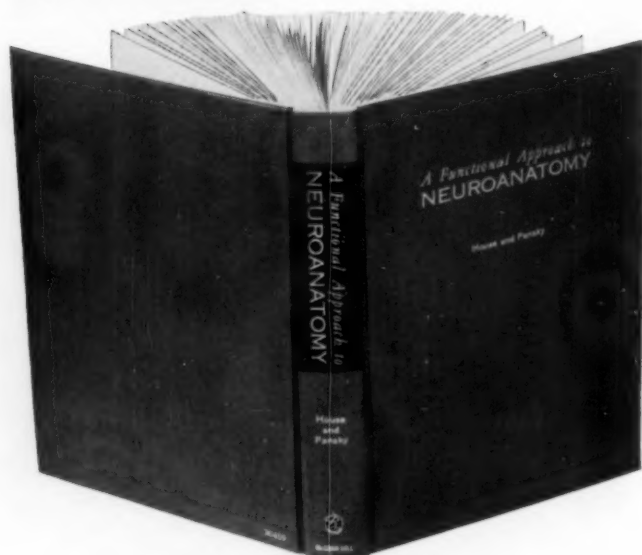
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INFORMATION FOR CONTRIBUTORS

The Journal of Medical Education serves as an international medium for the exchange of ideas in medical education, as well as a means of communicating the policies, programs, and problems of the Association. The Editorial Board welcomes the submission of manuscripts concerned with the broad field of medical education; this includes preparation for medical education; the medical school experience; intern and resident education; graduate and postgraduate medical education. The Editorial Board recognizes that medical education includes the activities of faculty, students, administrators, and those of the practicing profession who also teach and learn. Thus, it invites communications from any of these sources.

Manuscripts should be submitted in duplicate. All manuscripts are reviewed by the Editorial Board before acceptance for publication. All copy, including footnotes, tables, and legends, should be typed double-spaced. Each diagram or graph or photograph should have a brief legend. Each table should be typed on a separate sheet of paper. References should refer to published material only, must be submitted in alphabetical order, and should include, in order: author, title, journal abbreviation (*Quarterly Cumulative Index Medicus* form), volume number, page, and year; book references should also include editors, edition, publisher, and place of publication.

Galley proofs will be mailed to authors for correction before publication and should be returned within 48 hours after receipt.

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Medical Education Forum includes editorials, letters, comments, criticisms, and excerpts from important addresses.

News from the Medical Schools: Material for this section should be transmitted to the News Editor, Miss Neva Resek, 2530 Ridge Avenue, Evanston, Illinois. Announcements of major faculty and administrative appointments, news of distinguished visitors and significant educational developments will be included. It is not possible to publish notices on grants-in-aid for scientific research.

Items of Current Interest: Audio-visual news and notices from national and federal agencies appear in this section.

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Address all correspondence concerning reprints to the University of Chicago Press, 5750 Ellis Avenue, Chicago 37, Illinois. Address all correspondence concerning subscriptions, change of address, and back numbers to the Association of American Medical Colleges, 2530 Ridge Ave., Evanston, Ill. All changes of address should provide both the old and the new address.

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<p>ZINSSER</p> <p>MICROBIOLOGY (formerly Bacteriology)</p> <p>(12th Ed.—July 1960)</p>	<p>By David T. Smith, M.D. and Norman Conant, Ph.D. with 7 Collaborators</p> <p>This new 1960 edition has been retitled to indicate the inclusion of a new four-chapter section on parasitology by John E. Larsh, Jr., University of North Carolina. Also included are revisions of earlier material, a rewriting of the material on morphology and reproduction of bacteria, 52 new illustrations and 3 full-page color plates. Now stocked for Fall classes.</p> <p>July 1960 • 1040 Pages • 552 Illus. • \$13.00</p>
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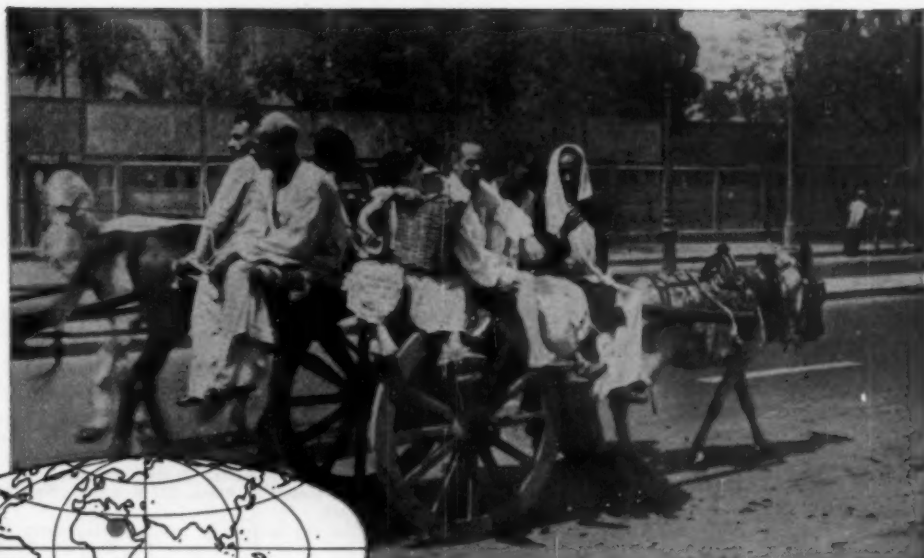


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1960

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- AMERICAN MEDICAL WRITERS' ASSOCIATION, Hotel Morrison, Chicago, Sept. 30–Oct. 1. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
- AMERICAN ROENTGEN RAY SOCIETY, Ambassador Hotel, Atlantic City, Sept. 27–30. Mr. Hugh Jones, 20 N. Wacker Dr., Chicago 6, Director, Public Relations.
- AMERICAN SOCIETY OF CLINICAL PATHOLOGISTS, Palmer House, Chicago, Sept. 24–Oct. 2. Mr. Claude E. Wells, 445 Lake Shore Drive, Chicago 11, Executive Secretary.
- COLLEGE OF AMERICAN PATHOLOGISTS, Palmer House, Chicago, Sept. 24–27. Dr. Arthur H. Dearing, 2115 Prudential Plaza, Chicago, Executive Director.

OCTOBER

- ACADEMY OF PSYCHOSOMATIC MEDICINE, Benjamin Franklin Hotel, Philadelphia, Oct. 13–15. For information write Dr. Bertram B. Moss, 55 E. Washington, Chicago 2.
- AMERICAN ACADEMY FOR CEREBRAL PALSY, Penn-Sheraton Hotel, Pittsburgh, Oct. 5–8. Dr. Joseph D. Russ, 1520 Louisiana Ave., New Orleans 15, Executive Secretary.
- AMERICAN ACADEMY OF OPHTHALMOLOGY & OTOLARYNGOLOGY, Palmer House, Chicago, Oct. 9–14. Dr. William L. Benedict, 15 Second St., S.W., Rochester, Minn., Executive Secretary.
- AMERICAN ACADEMY OF PEDIATRICS, Palmer House, Chicago, Oct. 17–20. Dr. E. H. Christopherson, 1801 Hinman Ave., Evanston, Ill., Executive Director.
- AMERICAN ASSOCIATION OF MEDICAL CLINICS, New Orleans, Oct. 6–8. Dr. Joseph B. Davis, 134 N. Washington St., Marion, Ind., Secretary.
- AMERICAN ASSOCIATION OF MEDICAL RECORD LIBRARIANS, Olympia Hotel, Seattle, Oct. 10–13. Miss Doris Gleason, 840 N. Lake Shore Dr., Chicago 11, Executive Director.
- AMERICAN ASSOCIATION FOR THE SURGERY OF TRAUMA, Coronado Hotel, Coronado, Calif., Oct. 5–7. Dr. William T. Fitts, Jr., 3400 Spruce St., Philadelphia 4, Secretary.
- AMERICAN COLLEGE OF GASTROENTEROLOGY, Bellevue-Stratford Hotel, Philadelphia, Oct. 23–26. Mr. Daniel Weiss, 33 W. 60th St., New York 23, Executive Director.
- AMERICAN COLLEGE OF SURGEONS, Clinical Congress, San Francisco, Oct. 10–14. For information write: Dr. William E. Adams, 40 E. Erie St., Chicago 11.
- AMERICAN FRACTURE ASSOCIATION, El Presidentia Hotel, Mexico, D. F., Mexico, Oct. 30–Nov. 4. Dr. H. W. Wellmerling, 610 Griesheim Bldg., Bloomington, Ill., Executive Secretary.
- AMERICAN HEART ASSOCIATION, Inc., Jefferson Hotel, St. Louis, Oct. 21–25. Mr. Rome A. Betts, 44 E. 23rd St., New York 10, Executive Director.
- AMERICAN OTORHINOLOGIC SOCIETY FOR PLASTIC SURGERY, Inc., Conrad Hilton, Chicago, Oct. 9. Dr. Joseph G. Gilbert, 75 Barbary Lane, Roslyn Heights L. I., New York, Secretary.
- AMERICAN PUBLIC HEALTH ASSOCIATION, San Francisco, Oct. 31–Nov. 4. Dr. Berwyn F. Mattison, 1790 Broadway, New York 19, Executive Director.

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ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES, Mayflower Hotel, Washington, D.C., Oct. 31–Nov. 2. Lt. Col. George M. Beam, AUS Retired, 1726 Eye St., N.W., Washington 6, D.C.

ASSOCIATION OF STATE AND TERRITORIAL HEALTH OFFICERS, Jack Tar Hotel, San Francisco, Oct. 26–28. Dr. A. C. Offutt, 1330 W. Michigan St., Indianapolis 7, Secretary-Treasurer.

INTERSTATE POSTGRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA, Pittsburgh-Hilton Hotel, Pittsburgh, Oct. 31–Nov. 3. Mr. Roy T. Ragatz, Box 1099, Madison 1, Wis., Executive Director.

NOVEMBER

AMERICAN SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Biltmore Hotel, Los Angeles, Nov. 2–5. Dr. Rolla B. Hill, 3575 St. Gaudens R., Miami 33, Fla., Executive Secretary.

ASSOCIATION OF CLINICAL SCIENTISTS, Shoreham Hotel, Washington, D.C. (Applied Seminar on Measurements of Pancreatic Function in Clinical Medicine, Nov. 4–5. Dr. F. William Sunderman, 1025 Walnut St., Philadelphia 7), Annual Meeting, Nov. 6. Dr. Robert P. MacFate, 54 W. Hubbard St., Chicago 10, Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH, Drake Hotel, Chicago, Nov. 4–5. Dr. Austin S. Weisberger, 2065 Adelbert Rd., Cleveland 6, Secretary.

PUERTO RICO MEDICAL ASSOCIATION, Santurce, Nov. 15–19. Mr. Jesus A. Sanchez, P.O. Box 9111, Santurce 29, P.R., Executive Secretary.

DECEMBER

AMERICAN ACADEMY OF DERMATOLOGY AND SYPHILOLOGY, Palmer House, Chicago, Dec. 3–8. Dr. Robert R. Kierland, First National Bank Bldg., Rochester, Minn., Secretary-Treasurer.

AMERICAN RHEUMATISM ASSOCIATION, Sheraton Dallas Hotel, Dallas, Texas, Dec. 9. Mr. Gerard W. Speyer, 10 Columbus Circle, New York 19, Executive Secretary.

CONFERENCE ON GRADUATE MEDICAL EDUCATION—"EDUCATIONAL PROBLEMS IN THE INTERSHIP AND RESIDENCY," University of Pennsylvania Graduate School of Medicine, Dec. 1–2. For information write Dr. Paul Nemir Jr., 237 Medical Laboratories Bldg., Philadelphia 4, Dean.

RADIOLOGICAL SOCIETY OF NORTH AMERICA, Netherland Hilton Hotel, Cincinnati, Dec. 4–9. Dr. Donald S. Childs, 713 E. Genesee St., Syracuse 2, N.Y., Secretary.

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¹Rock, J.; Garcia, C. R., & Pincus, G.: *Am. J. Obst. & Gynec.* 79:758, 1960.

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Edited by SEWARD E. MILLER, M.D., *Medical Director, United States Public Health Service;
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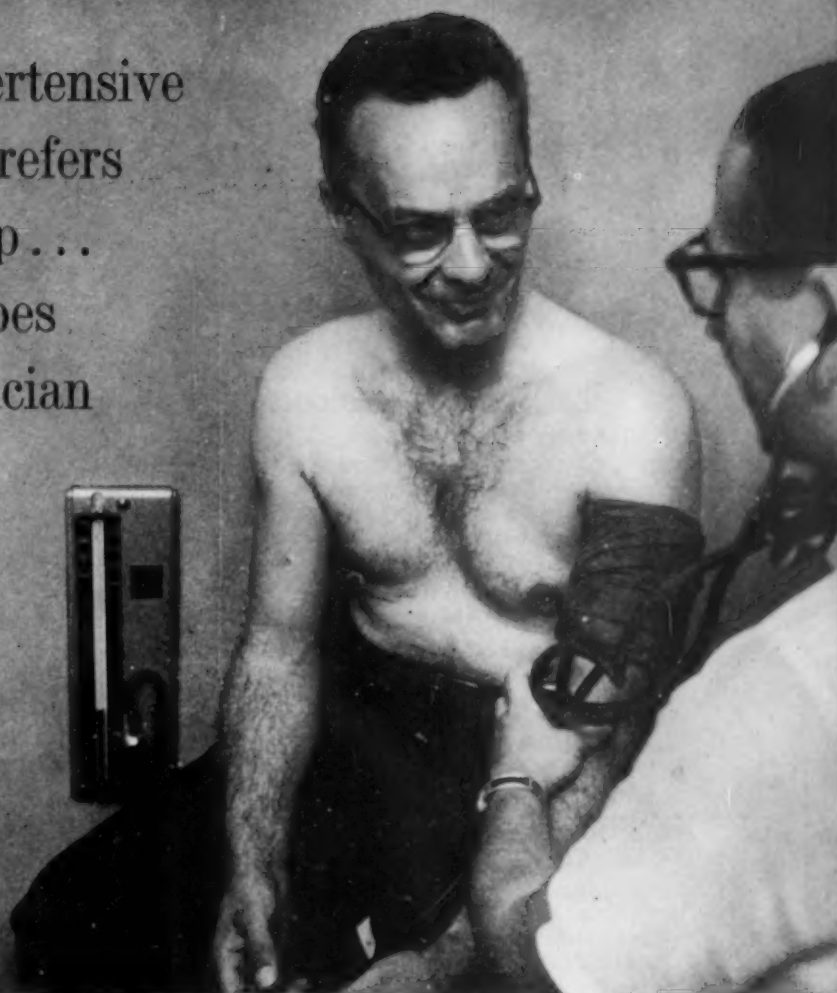


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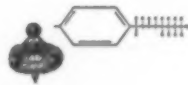
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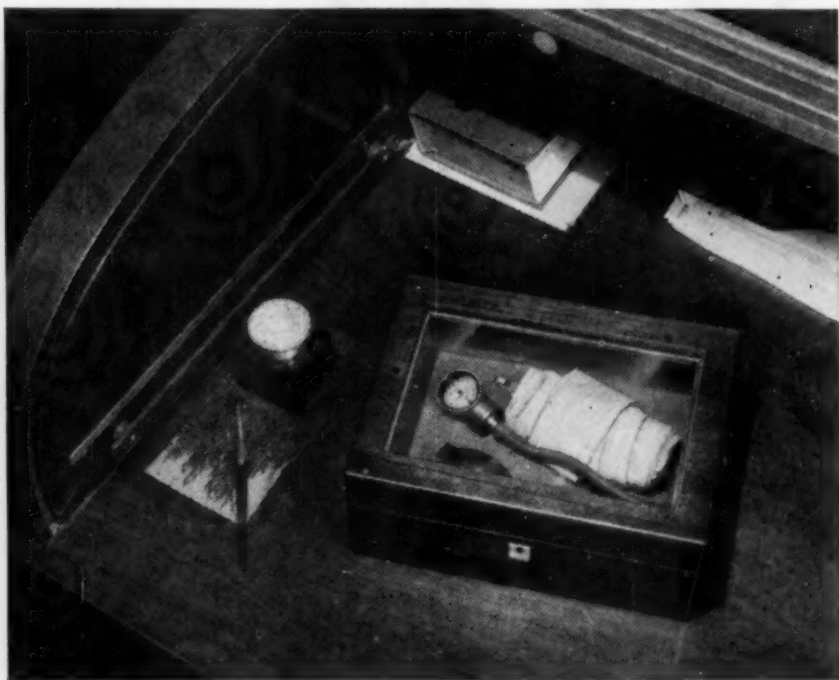
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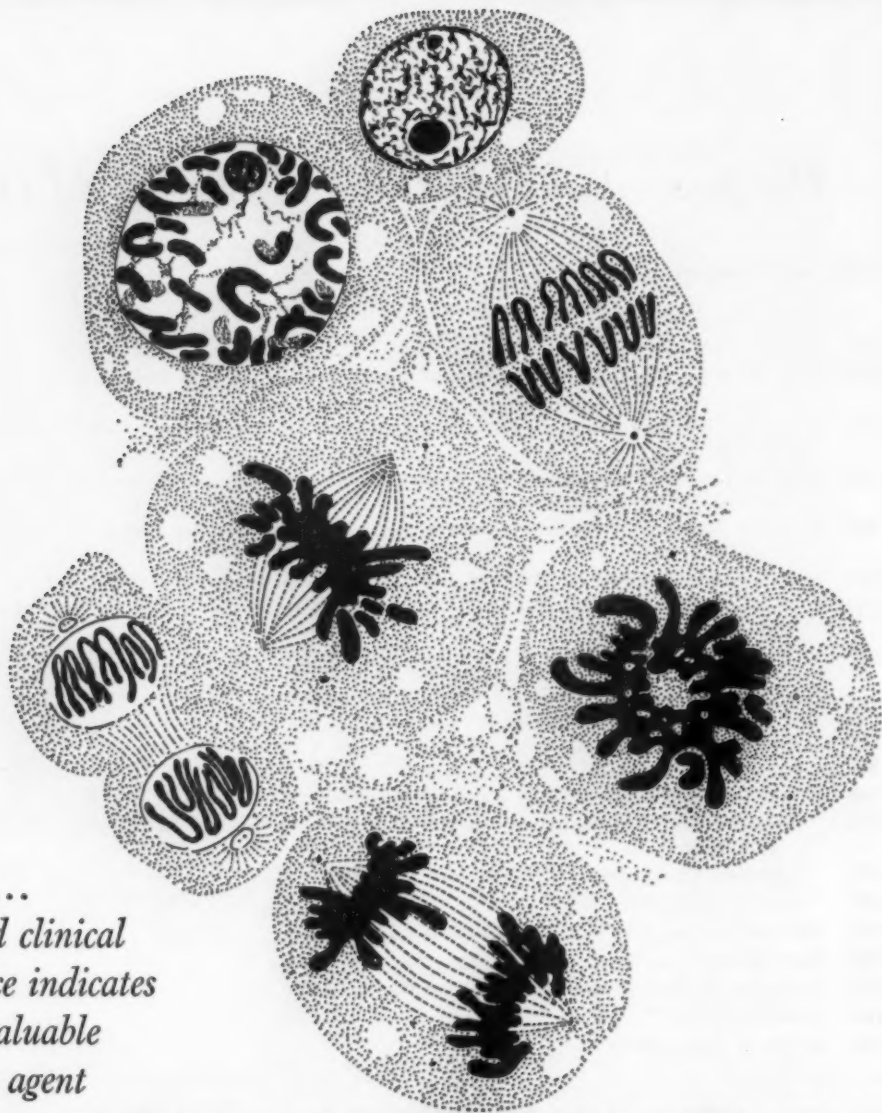
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Demography in the Medical Curriculum*

CARL E. TAYLOR, M.D.

Harvard School of Public Health, Boston, Massachusetts

For medical purposes, demography can be defined as the study of the size, composition, and distribution of human populations. It is an observational, not an experimental, science. Interest is in such variables as natality, mortality, migration, social mobility, age, sex, race, ethnic distribution, mental capacity, attained skills, and health (1-3). It provides the denominators of the rates used in medical and health statistics, whereas epidemiology provides the numerators.

There are probably less than 1,000 specialists in the United States who would refer to themselves as demographers. Most of them originally trained as sociologists, and a sizable proportion have taken their Ph.D.'s from one of four universities. The tradition of close affiliation with the medical specialties goes back to John Graunt's work on the British "Bills of Mortality" in 1662 and Sir William Petty's "Political Arithmetick" in 1690.

The concern of demographers with population size has placed them in a position of leadership among those studying the implications of population growth. Population

projections based on estimates of natality, mortality, and migration are periodically compared with indices of economic and social progress. Rapid population growth is bound to be an increasingly serious concern in international health.

Demography's role in medicine.—There is little prospect of doctors' using demography directly in clinical practice or even consulting with a demographer in the way that they consult with specialists in pathology, biochemistry, or even statistics.

The indirect contributions of demography to medicine can be grouped under the following headings.

1. Patterns of medical care are modified by changing population composition. In medical economics the current and predicted size of the population and their ability to pay need to be balanced against the availability of medical facilities. Local trends may be quite different from general patterns in the movement of social organization for health. Major shifts in population composition require changes in medical practice such as the growing importance of geriatrics as a result of the advancing age of the general population. Also of practical importance is specific knowledge about factors relating to health in limited population groups. The concentration of Puerto Ricans in New York and other cities has required practitioners to take a greater interest in

* Presented as a Panel Discussion at the Meeting of the Association of Teachers of Preventive Medicine in Atlantic City on October 18, 1959. Members of the Panel were Dr. Henry J. Bakst, Dr. Halbert L. Dunn, Dr. Henry B. Makover, Dr. Robert Reed, Dr. Matthew Tayback, and Dr. Carl E. Taylor, Chairman.

tropical medicine. The increasing assistance offered to local communities under the Hill-Burton Act and similar legislation is based on demographic evaluation.

2. Recent calculations of the increasing requirements for doctors are based on demographic trends. Pertinent demographic information is of considerable practical importance to a physician in choosing a place to open his practice. Rather than relying only on subjective impressions and friendships, he should inquire about the yearly growth of population in the area, changes in its composition, and the annual attrition rate for doctors from active practice.

3. As a leader in community decisions on health questions, the physicians should have balanced opinions based on factual knowledge which can be convincingly communicated to the public. Current interest in controversial legislation, such as the Forand Bill, requires doctors to take a public stand, and unless they know the demographic factors their judgment is not worthy of their professional positions.

4. To specialists in epidemiology and public health demographic information is completely essential. Vital statistical calculations depend on population data. Rates derived by epidemiological methods are of constant value to practitioners who keep up with the current health status of their communities.

5. In marital counseling most practitioners will have to form an attitude on questions relating to family planning. Doctors are increasingly asked by married couples for advice on ways in which they can adjust family size to personal aspirations and their capabilities for rearing children. Physicians may feel responsibility for attempting to influence public opinion on whether birth control information should be provided for medically indigent families. In the international health field there is developing demand from countries receiving foreign aid for technical and research help in family limitation.

The contribution of demography to medicine is not a one-way proposition. Medical

men also make important contributions to demography. Medical reports on births, deaths, and diseases are the factual information on which demographic analyses are performed. If doctors understand the purposes of demographic analysis, their reports will be better, because they are based on informed interest.

Fitting demography into the medical curriculum.—Adding anything to the medical curriculum that does not have immediate relevance to clinical practice requires special justification and judicious planning.

There are three basic questions in curriculum planning: What is the subject matter to be presented? How does this subject contribute to professional knowledge, skills and attitudes? What is the level of proficiency in this subject matter with which students enter this phase of their educational experience? Although it seems reasonable to teach demography as part of premedical general education, existing high school and college courses do not ordinarily include this material. Consideration of those aspects relevant to medicine should, therefore, be included in the basic medical course. A minimum of three to four class sessions is suggested.

Demography should be taught in those contexts where its relevance is apparent to the highly pragmatic medical student. It does not merit the status of a separate subject. The applicability of fundamental background data and skills can be clearly recognized in the following courses.

1. Teaching of biometry and biostatistics is often started in the preclinical period. Introductory consideration of demographic methods is important in understanding the sources of much statistical information. This relates particularly to the conduct of censuses, surveys, and the various forms of reporting by doctors and others.

2. In teaching epidemiology to medical students, demographic principles and data have particular pertinence. From demographic data come many of the denominators used in epidemiologic analysis.

3. An increasingly important part of

teaching preventive medicine in certain medical schools is an area of knowledge that can best be grouped under the heading of human ecology (3). Although difficult to distinguish from epidemiology, its primary concern is with the over-all relation of man to his environment. The focus is not primarily on disease and its causative agents, although these are, of course, part of the environment. This is probably a better term for what has in the past occasionally been referred to as the "epidemiology of health." Ecology deals with populations and their relationships. The factors determining population size and composition are basic to ecologic understanding. Demographic principles provide a sound introduction to other related subject matter such as medical sociology.

4. The most practical applications of demography in medicine relate to questions of medical care, medical economics, and medical manpower. In the clinical years most departments of preventive medicine teach about the organization of health and medical care services.

5. Marital counseling is an important medical responsibility which, in addition to general questions of interpersonal relationships, makes available technical advice on family planning. The latter has generally

been taught in obstetrics. Consideration of demographic factors influencing decision about family size should logically be included.

SUMMARY

Although demography has little direct relevance to clinical practice, it has been shown to be of considerable and increasing indirect importance. Teaching this subject in medical schools can best be included under five types of courses in which its usefulness will be apparent to pragmatic medical students. The four areas of biostatistics, epidemiology, human ecology, and medical care are normally part of the responsibility of departments of preventive medicine, whereas technical aspects of marital counseling relating to decision about family size are usually taught in departments of obstetrics.

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The Medical Education Program at the University of El Salvador

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The Central American republic of El Salvador is a mountainous country of lakes and volcanoes, which has an area of approximately 13,000 square miles and a population of over 2,300,000. There exists a serious problem in medical care due to a shortage of physicians. There are less than 350 doctors in the country, and more than half of these are concentrated in the capital city of San Salvador with its population of 203,000.

The only school of medicine, that of the University of El Salvador, has graduated during the past 10 years an annual average of only fourteen physicians. Concerned health officials estimate that to supply the country's medical needs over the next 10-15 years the school should be graduating 60-70 physicians annually. Although enrollment in the school has been adequate, an excessively high failure rate, especially during the early years of the medical course, has resulted at times in the elimination of as much as 90 per cent of the entering class. The high failure rate has been partly a result of the inadequate premedical education of entering students.

Health and medical school authorities have long been aware of problems existing in medical education. In 1956 classes were still being held in the small, old, two-story concrete medical school building located in a medical center area at the edge of the central commercial district of San Salvador.

* Formerly Medical Education Advisor in Pathology to the International Cooperation Administration, U.S. Operations Mission to El Salvador, and Visiting Professor of Pathology, University of El Salvador.

The building consisted largely of lecture rooms, together with a few offices. With the exception of a newly organized physiology department there were no laboratories. The medical library contained a small number of old textbooks, many of them of French origin. The dean and other officers of the school held only part-time appointments and were thus unable to devote sufficient time to administration. Also, with the exception of the physiology department, there was no full-time teaching staff. As in the past, instruction in the basic sciences was largely theoretical and was given by practising physicians who dedicated certain hours to the school. The teaching program was not well coordinated, and classes were often irregular. Sometimes the physician-teachers were unable to fulfill their teaching commitments because of urgent clinical duties. The principal clinical teaching unit was the nearby 1200-bed Hospital Rosales. Here the Department of Pathology held its classes and provided routine pathology services as well. Clinical instruction was also given at the 200-bed Hospital Maternidad and at the adjacent 180-bed pediatric Hospital Bloom. Along with the basic sciences, the clinical teaching suffered from inadequate organization and direction.

After a careful study of the situation, the government of El Salvador requested the government of the United States to assist them in the further development of medical education at the School of Medicine of the University of El Salvador. As an important feature of this program visiting professors

were brought to El Salvador from United States and other foreign medical schools to work with members of the Salvadorean faculty in the reorganization of the school and especially to assist in the development of the basic science departments. In the short time that this program has been in operation much progress has been made toward the institution of a modern medical educational system.

History of the School of Medicine.—One must know something of the medical school's history to understand the situation which existed and to appreciate the significance of the changes which have been brought about as a result of the new program.

In the colonial days, toward the end of the 18th century, El Salvador was a province of the Spanish-ruled Kingdom of Guatemala. The only nearby institutions of learning were the University of San Carlos in Guatemala and the University of Santiago in Nicaragua. Appeals were made to the courts of Spain for help in establishing educational institutions in El Salvador, but these apparently met with no success.

On September 15, 1821, Central America won its independence from Spain. El Salvador was declared an independent and sovereign state on February 2, 1841. Recognizing its responsibilities to the people, the government declared on February 16 of that year that there be established in the capital a University and a College of Education. This was founded in the convent of St. Francis. Although the courses were at first limited to Latin and philosophy, by 1847 a chair of anatomy had been established in the College of the Assumption, as it was then called. The first medical courses, consisting of anatomy with physiology, were given to a class of five students. By 1849 the medical studies had expanded to include also chemistry, botany, zoology, hygiene, pathology, and certain general medical and surgical subjects.

In 1854 an earthquake, a common natural disturbance in this area, destroyed the city of San Salvador, thereby forcing the university to move temporarily to another city.

When it returned to the capital in 1858 there were 107 students enrolled. Indicative of the general apathy regarding medical education at the time is the fact that there were only two students taking the medical course and only two professors teaching it. During much of the latter half of the nineteenth century conditions in education were unsettled. Wars and political crises caused the university to be closed many times. Often new governments made radical changes in the institution's organization. In 1882 the medical school consisted of ten teaching departments. The course in medicine was of 6 years' duration. Classes were held at the university building in the center of the city, and clinical instruction was given at a nearby general hospital. In 1891 the Salvadorean philanthropist José Rosales willed his estate for the construction of a large hospital at the edge of San Salvador. About 10 years later an anatomical amphitheater was constructed near this hospital with funds solicited by students, who had until that time been performing anatomical dissections in inadequate quarters near the municipal cemetery. Renewed interest in the school resulted in the government's beginning construction of a new medical school building across the street from the new Hospital Rosales. The school building was inaugurated and occupied on March 1, 1913, although its second story was not added until 1936. On the night of June 7, 1917, there was a violent eruption of the San Salvador volcano located at the edge of the city. The lava fortunately flowed in a direction away from the capital. There was, however, an accompanying earthquake which destroyed most of the city's buildings. Damages to the medical school were not completely repaired for several years.

Political upheavals also continued to disturb the country and its educational institutions. These finally terminated in a revolution in 1944, after which the present democratic form of government was established. Concern again over the situation in medical education resulted in the formation of a faculty committee to make a long-needed re-

vision of the curriculum. A program known as the "Plan of 1949" evolved, which envisioned a medical course of 7 years including a year of premedical studies. There happened to occur a student strike against the university, however, that prevented the new plan from being put into operation. Progress in medical education was, therefore, again interrupted.

When one considers the turbulent history of the school it is not difficult to understand why medical education in El Salvador has not progressed more than it has in the past 110 years.

Development of present program for reorganization.—In 1952 the Kellogg Foundation provided a fellowship in physiology in the United States for a promising medical graduate of the University of El Salvador. This man returned to become in 1955 the first professor to be employed by the school on a full-time basis. He soon organized a teaching department of physiology, which has served as a model for the reorganization of other basic science departments. He has provided able and dedicated leadership, which has been responsible for much of the progress in medical education at the university.

The developments in the Department of Physiology aroused new interest in improving the medical school. Many faculty members and physicians favored a complete reorganization of the teaching, and in 1955 a committee to draw up plans for this was formed. The Chief of the Health Division of the United States Operations Mission to El Salvador (of the International Cooperation Administration) became actively interested in this project and began to assist in mobilizing local and I.C.A. resources in support of it. Conferences were held between the medical school faculty, the Ministry of Health and the International Cooperation Administration. It was agreed that efforts should first be directed toward improving the teaching in the basic sciences. It was also considered essential that full-time teaching personnel be acquired for these departments. In April, 1956, the governments of El Salvador and the United States formally agreed

to establish a cooperative program in medical education. To finance this a special joint fund was established, the major part of which was contributed by the Salvadorean government. The fund was to be administered by the Servicio Cooperativo Interamericano de Salud Pública.¹

Reorganization of departments and revision of curriculum.—Under the new program a faculty committee restudied and replanned all medical school operations. The following teaching departments were created, each to be directed by a full-time professor:

- Anatomy, including Histology and Embryology
- Biochemistry
- Microbiology, including Parasitology, Bacteriology and Immunology
- Physiology and Pharmacology
- Preventive Medicine and Public Health
- Medicine, including Pediatrics, Psychiatry and medical specialties
- Surgery, including subspecialties
- Obstetrics and Gynecology

As a result of changes made in admission procedures, entrance standards were raised. The selection of students is now made by an admission committee and is based upon a written examination, personality and aptitude tests, secondary school grades, and a personal interview. Applicants for the medical course are required, as before, to hold the "Bachiller" or secondary school degree, which is roughly equivalent to junior college education in the United States. The entering class is limited to 45 students by available space, equipment, and personnel.

¹ Cooperation of the Office of Public Health of the International Cooperation Administration in projects is usually extended through the medium of what is known as the Inter-American Cooperative Public Health Service (Servicio Cooperativo Interamericano de Salud Pública, or S.C.I.S.P.). The Chief of the Health Division directs this semi-independent organization, which is financed by contributions from both governments. The more independent status which the S.C.I.S.P. has provides it with the necessary financial and operational control to undertake experimental and development programs. Projects once developed on a firm basis are then taken over as an integral part of Salvadoran government operations.

There was some popular objection to this restriction; however, it is now more widely understood by the public that it is in the interests of good education that the enrollment not exceed the teaching capacity of the school.

The complete medical course is of 8 years' duration. Included in this is a year of premedical studies designed to remedy certain deficiencies in secondary school preparation. This is taught by the basic science departments and includes chemistry, biology, physics, mathematics, English, French, and Spanish. It is hoped that soon a school of arts and sciences will be established in the university which will be able to assume this teaching responsibility.

The length of the medical course proper is 5 years. The first consists largely of anatomy, histology, and embryology. In the second year the student receives instruction in biochemistry, microbiology, and physiology. Also, during the first 2 years a course in the use of the library is given. The third year consists of pathology, obstetrics, and introductory medical and surgical subjects. The fourth year is primarily clinical, and, in addition to further medical and surgical training, the students receive courses in gynecology, pharmacology and materia medica, legal medicine, psychopathology, radiology, and the history of medicine. In the fifth year the emphasis is on practical work in medicine and surgery and their subspecialties on the wards of the hospitals. Pediatrics and psychiatry are taught at this time, and practical experience in obstetrics is obtained at the maternity hospital.

An important development has been the organization of a program in preventive medicine integrated into the general curriculum from the first year on. Under this program students study epidemiology, biostatistics and other fundamental public health sciences in their early years and later, in the clinical years, gain public health experience in a new health center and outpatient facility adjoining the medical school and its teaching hospitals. Following the academic course of medicine there is 1 year of

internship and 1 year of rural and community health service which must be completed before the degree of Doctor of Medicine is granted. All graduates must also present a doctoral thesis.

Development of the faculty.—A principal objective of the program was the development of a staff of full-time professors and auxiliary teaching personnel for the basic science departments. Therefore, to attract competent men to the faculty, the school established a system of adequately paid full-time positions. Most of the faculty members appointed in 1956 and 1957 under this new arrangement had previously taught in the school on a part-time basis. Many had received education and training abroad, and all were well qualified to carry forth the program of reorganization.

The Professor of Physiology was the first full-time department head. Appointed Professor of Pathology was the Chief of the Department of Pathologic Anatomy of Hospital Rosales, who had been responsible for the teaching of this subject previously. The former Director of the National Department of Public Health became the Professor of Preventive Medicine and Public Health. Very active in the early stages of the program was the Professor of Parasitology who came from Venezuela. He subsequently returned to his country, and his place was taken by the Professor of Parasitology of the as-yet-uncompleted medical school of the University of Costa Rica. A Professor of Pharmacology was brought from Spain to develop the teaching in that subject. The school also gradually acquired a complement of assistant professors and instructors as well as the necessary technical and administrative personnel. Certain faculty members were added primarily for the teaching of premedical subjects.

The cooperative character of the program was exemplified by the bringing of visiting professors from other medical schools to assist in the modernization of the basic science departments. The first to arrive under the provisions of the program was the Visiting Professor of Anatomy, who came from the

University of São Paulo in Brazil in the fall of 1956. He was followed by a Visiting Professor of Bacteriology from Baylor University. A Visiting Professor of Pathology from Ohio State University arrived in May, 1957, followed a month later by the Visiting Professor of Biochemistry from the University of Texas.

Improvement of administration.—Attempts were made to institute improved administrative practices, inasmuch as deficiencies in this area had been responsible for many of the school's problems.

The School of Medicine has a Board of Directors which formulates and interprets the regulations of the school in accordance with the university statutes. This policy-making body is composed of three faculty members and a student. It meets regularly twice a month. The Dean, whose office is part-time, administers the school with the authority vested in him by the Board of Directors. He also communicates with the Superior University Council, which supervises the over-all activities of the various colleges of the university. The school also has a Vice-Dean and a Secretary, both part-time. There is an Assembly of Professors, composed of all faculty members, which meets twice a year to consider major school issues. This group chooses members for the Board of Directors as well as the school's representatives to the Superior University Council. The newly revised regulations of the medical school now provide, also, for a Director and a Technical Council. Although no Director has been appointed as yet, it has been envisioned that his position would be full-time and that it would carry sufficient independent authority so that he could effectively direct educational activities. He would preside over the Technical Council. A Technical Council has recently been formed. This is composed of five professors, each of whom serve terms of 3 years. The chairmanship is rotating, and each member has an alternate. The council, which meets twice monthly, provides an opportunity for group discussion and planning by principal faculty members. It has been responsible for

the development and introduction of many improvements in educational procedures and school organization.

In the past the financial resources of the school were often inefficiently utilized because of the lack of an adequate system of budgeting, accounting, purchase and fund control. In an effort to bring about improvements in this area the management services of the Servicio Cooperativo Interamericano de Salud Pública have been made available to the school.

Other forms of assistance.—The school's budget has been considerably increased over that of previous years as a result of the El Salvador-United States cooperative medical education project. The program has also benefited from the cooperation and generous support of certain philanthropic organizations. The Kellogg Foundation has made valuable contributions to the development of the Department of Physiology and to the Medical Library, and has provided teaching equipment for the school in general. The Rockefeller Foundation has given significant aid with grants for personnel and equipment for the basic sciences and for the development of the program of preventive medicine and public health. Local financial assistance has been given by the Sociedad Pro-Educación Médica, a private organization of public-spirited citizens, which was founded in 1956 to promote improvements in medical education. The school has also received donations of books and laboratory equipment from other interested local and foreign sources. The U.S. Atomic Energy Commission recently provided equipment for radioisotope studies.

Of great importance to the school have been the many fellowships which have been extended to those in the health fields by foundations and government agencies. Many of these who have profited from postgraduate training in the United States are now contributing actively to the medical school's development. Such fellowships will continue to be indispensable in providing teaching personnel. One feature of the cooperative program has been the selection

by visiting professors and local faculty of promising graduates of the university to receive fellowships in medical education in the United States under the auspices of the International Cooperation Administration. It is anticipated that, upon their return, these men and women will be able to assume important responsibilities in the basic science departments.

Progress.—Considerable progress has been made in realizing the goals originally set. Previously mentioned have been the important changes in the organization of departments, the efforts to improve administrative practices, the revision of the curriculum, and institution of new admission policies.

Perhaps the most significant advance has been the development of a staff of full-time teaching personnel for the basic science departments. There are now faculty members who can devote their full time and energies to teaching and to the continued improvement of the school. Physical facilities have been modified, wherever possible, to accommodate the reorganized departments. Certain of the classrooms have been converted to laboratories where supervised laboratory instruction now complements the theoretical education. Through coordination in the scheduling of classes, maximum use is being made of the still-limited space, equipment, and personnel. The Department of Physiology has greatly augmented its teaching capacity and has taken on, in addition, the responsibility for the premedical teaching of physics. The Department of Anatomy has established a completely equipped dissection laboratory as well as laboratories for the teaching of histology and embryology. Adequate microscopes and teaching material are available for all students. The Department of Microbiology has acquired basic laboratory facilities and equipment for its instruction in bacteriology, parasitology, and immunology. This department conducts the premedical course in biology. It has also aided in the development of a needed bacteriology section in the clinical laboratory of the maternity hospital.

The Department of Pathology, which has offered lecture and laboratory instruction for some years in Hospital Rosales, has made many improvements in its teaching program and facilities. Construction of new laboratories for the Department of Biochemistry has been completed, providing for much better instruction in this subject. In addition, courses in inorganic and organic chemistry are being given to premedical students. Some of the departments have developed to the degree where they have been able to organize postgraduate courses for physicians and other health workers. Some have organized basic science courses for students of the School of Dentistry. The Medical Library, which is now supervised by a trained librarian, is expanding its collection rapidly and will soon be one of the most complete in Central America. A division of Medical Photography and Illustration has been established at the school to provide teaching aids.

As the necessary changes in the basic science teaching have been realized, attention has been directed toward the institution of similar reforms in the clinical teaching. Leadership in this area has come from the Department of Medicine. Several of its members visited medical schools in the United States and Latin America in 1957. Upon their return, they collaborated with others of the department in developing an improved program for the teaching of clinical medicine. The staff was reorganized, and a Director of Teaching was appointed. As a center for this department's activities an office and a conference room have been built in the Hospital Rosales. Progress in this department so impressed the de Sola Foundation, a locally endowed institution, that it recently donated a teaching and research laboratory.

Not only has there been a deficiency of doctors in the country, but there has also been a severe shortage of trained medical technicians for public health and hospital laboratories. As a result of the organization of its basic science departments it became possible for the medical school to utilize its

teaching facilities for the training of medical technologists at little additional expense. Consequently, a School of Medical Technology was organized, and this was inaugurated in May, 1958. This school originally offered a 2-year course consisting of a semester of basic sciences, two semesters of laboratory sciences, and a semester of supervised practical work in affiliated hospital and public health laboratories. Increased hospital facilities have now made it possible to expand the final period of practical experience. The entering class is limited to fifteen students, who are selected according to criteria similar to those used in the selection of medical students. The School of Medical Technology is also developing courses of training for other auxiliary medical personnel, such as x-ray technicians, anesthesiology technicians, and physiotherapists. Skilled technical personnel will be needed in increasing numbers by the developing medical school. Since they are also indispensable for the modern practice of medicine, such programs of training are considered an integral part of the medical education program.

It was wisely decided at the beginning that the development of a strong faculty should take precedence over mere improve-

ments of physical facilities. However, plans are now being made for a new medical school building. The experience gained in the current reorganization process should ensure that the next building will be well designed to serve its purpose.

The advances in medical education in El Salvador are already being reflected in improved medical care for the people. Developments in this school are being carefully studied by other divisions of the university as well as by other Latin American medical schools with similar situations. The remarkable progress which has been made in so short a time at the School of Medicine of the University of El Salvador is the result of the combined efforts of many local and foreign medical educators and health workers. It is an impressive example of what can be accomplished through international cooperation in the field of medical education.

Valuable material for this article was derived from the comprehensive reports of Benjamin G. Horning, M.D., former Medical Education Consultant to the International Cooperation Administration. Many of the historical data were obtained from the doctoral thesis on the subject by Guillermo Dardano, M.D., of the University of El Salvador.



School of Medicine of the University of El Salvador.



Hospital Rosales, principal teaching hospital of the medical school.

Erasmus Darwin Fenner (1807-1866)

Journalist, Educator, and Sanitarian

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In the long history of New Orleans—a history going back for almost 250 years—two distinct periods can be readily ascertained. The first, lasting 150 years, includes a century of French and Spanish control, when New Orleans was a small provincial town, and another half-century of booming prosperity in the American union. In the last 20 years of this first period (1840-1860) the Crescent City capitalized on the westward advance of King Cotton and the great age of the river steamboats. Although the railroads were thrusting their fingers from the Atlantic states toward the fabulous cereal bowl of the present Midwest, the broad Mississippi and its network of tributaries still drew the mountains of Western agricultural products southward to New Orleans. The easy wealth to be obtained in New Orleans attracted ambitious young Americans from the Northern and Eastern states, and—like all great port cities—a cosmopolitan group of European immigrants ranging from starving and illiterate Irish to continental intellectuals fleeing from the unsuccessful revolutions of 1848.

As in most American cities, the residents of New Orleans in the early years of prosperity were preoccupied with economic matters; but, with the accumulation of wealth came a quickening of intellectual life. Probably nowhere is this better shown than in the development of medicine during these years. Medical schools, societies, and publications flourished on an unprecedented scale, and, led by a group of capable physicians, a

strong public health movement was initiated.

Among the many forceful and colorful characters in the New Orleans medical profession, probably no one made so deep an impression upon medical education and literature as Dr. Erasmus Darwin Fenner (1807-1866). Described by his best friend as modest, unassuming, and not particularly effective as a speaker, nonetheless, during his quarter of a century in New Orleans, Fenner found himself almost constantly engaged in controversy of one sort or another. Measured in terms of financial success, his career was not fruitful: three of the four medical journals with which he was associated lasted only briefly; the medical school he founded did not long survive him; and he left only a modest estate on his death in 1866. Yet Fenner, whose aim was to advance the cause of medicine in what was then termed the Southwest, succeeded admirably in the task he set for himself.

Doctor Fenner, the son of a North Carolina physician and Revolutionary veteran, was born near Louisburg, in Franklin County, North Carolina, in the year 1807. Ten years later the family moved to Raleigh and from there pushed on, in 1823, to the "Western District" of Tennessee. Fenner's education was started at the academy in Raleigh and, after the move to Tennessee, was continued under the direction of a private tutor. Following what was apparently a family tradition, in 1827 he elected to study medicine under the guidance of an elder brother, Dr. Robert Fenner,

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in the town of Jackson, Tennessee. Two years later he entered the University of Transylvania in Kentucky, from which he was graduated with an M.D. degree in 1830. For three years he practiced with his brother in Jackson. This period was marked by only one major event—his marriage in 1832 to a Georgia girl, Miss Ann Collier.¹

Determined to strike out on his own, the following year he established himself in Clinton, Mississippi. Shortly afterward his

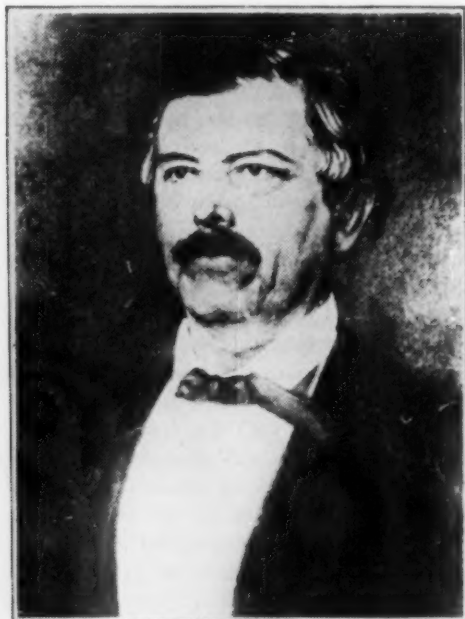


FIG. 1.—Erasmus Darwin Fenner

only son, Charles, was born. Fate, which had been kind to him up to this time, struck two heavy blows in 1837. His young wife died, and the depression of 1837 created serious financial problems. Although he had become well liked and had developed a successful practice, Doctor Fenner decided to leave Clinton as soon as he could straighten out his economic difficulties. In the winter

of 1840–41, he visited New Orleans. Finding the intellectual opportunities much to his liking, he settled there permanently late in 1841.²

Possibly a little introverted, Doctor Fenner found the going somewhat difficult at first, but gradually his sincerity and ability won for him a substantial practice. Meanwhile, he had become conscious of the backwardness of the Southern states on the score of medical publications. The Medical College of Louisiana, founded in 1835, was flourishing at the time, and logically its faculty should have taken the initiative in establishing a medical journal. The failure of the professors to do so encouraged Fenner to undertake the project in conjunction with Abner Hester, another young, ambitious practitioner. The result was the appearance of the *New Orleans Medical Journal*, the forerunner of the *New Orleans Medical and Surgical Journal* and the present-day *Journal of the Louisiana State Medical Society*.

In an introductory editorial, the two young editors explained they had reluctantly assumed their editorial work because of the need to fill the wide void in Southern medical journalism. Expressing a belief that both men were to maintain throughout their lives, the editors declared "that the diseases of the South can only be studied and learned in the South." They hoped, too, that the *Journal* would "give a fresh impulse to Medical Study and investigation," and that it would be "a means of combining the isolated and disjointed labours and observations of the numerous and talented Physicians in the Southern States into a form possessing strength, symmetry, and usefulness." Finally, they appealed for unity among the profession on the grounds—among others—"that the Medical Profession had been for some time gradually losing caste and respectability in the South."³

The existence of "ignoble jealousies" in the ranks of the medical men, a phrase

¹ There are several short biographies of Doctor Fenner, but the best one is by D. Warren Brickell, "Biographical Sketch of Erasmus Darwin Fenner, M.D.," *Southern Journal of Medical Sciences*, I: 401–23, 1866–67.

² *Ibid.*, pp. 401–3; *New Orleans Medical and Surgical Journal*, X:557, 1853–54.

³ *New Orleans Medical Journal*, I:1–6, 1844–45.

which the two editors had used in their first editorial, became all too apparent by succeeding events. Fenner and Hester had been hard put to find financial backing for their journal. After appealing in vain to booksellers, newspaper owners, and the medical faculty, they were able to publish their first issue only through an opportune contact with a French printer, temporarily out of work, who was willing to take a chance upon their prospects. By dint of hard work and cutting corners, the two editors kept the *Journal* going for the first year.

As they entered the second year with a growing circulation and brighter prospects, they were suddenly confronted with a crisis. Several members of the medical college faculty who had refused to cooperate in founding the journal now saw the advantages to be gained and announced their intention of creating a rival periodical. Recognizing that New Orleans could not support two medical journals and that they could not compete with a group of leading New Orleans physicians and surgeons, the two editors had no choice but to join forces with the medical school faculty. Consequently, Professors William M. Carpenter and John H. Harrison were designated as editors along with Fenner and Hester, and the magazine was renamed the *New Orleans Medical and Surgical Journal*.⁴

Despite the polite blackmail that had forced Fenner and Hester to accept additional partners, the two men worked zealously and faithfully on the *Journal*. Over and above his editorial work, Fenner contributed a number of articles, including an account of a tour he made of the Northern states, a report on the New Orleans yellow fever epidemic of 1846, and several case histories. However, early in 1848 he resigned his editorship. His exact motives are difficult to determine. In his final editorial he gave no explanation, but merely urged

the readers to continue their support. The remaining editors appended a note indicating that Fenner's resignation might be the prelude to that of the others because the *Journal* was in desperate financial straits. The editors had not only gained no recompense for their work, they wrote, but had had to contribute their own funds to keep the periodical in operation.⁵

Undoubtedly financial matters were a factor in Fenner's resignation. Some 10 years later he wrote that he had worked for 4 years on the *New Orleans Medical and Surgical Journal* and received only \$125 for his efforts. Yet the fact remains that a year later he was engaged in establishing a second medical periodical. His closest friend, Dr. D. Warren Brickell, wrote many years later:⁶

We know that Dr. Fenner abandoned his position of editor of the New Orleans Medical and Surgical Journal most reluctantly. It has been seen how, in the early struggles of the originators, factitious obstacles were thrown across their path, and that poverty forced them to a compromise which nothing else could have extorted. All this finally culminated in the retirement of Dr. Fenner. . . .

Whether or not the actions of the medical college faculty rankled in Fenner's mind, henceforth he was constantly engaged in a rivalry with the *New Orleans Medical and Surgical Journal* and the University of Louisiana Medical School, formerly the Medical College of Louisiana.

It is likely that Fenner had already envisioned his second publication venture when he retired from the first in 1848, for the following year he began publication of the work for which he is best known, the *Southern Medical Reports*. Unfortunately for the ante bellum South and for present-day students of history, this work survived only 2 years. In his "Introductory Address" Fenner declared that during the eighteenth century the South had produced distin-

⁴ Brickell, "Biographical Sketch of Erasmus Darwin Fenner, M.D.," p. 407; see also A. E. Fossier, "History of Medical Education in New Orleans . . . to the Civil War," *Annals of Medical History*, n. s. VI:436-37, 1934.

⁵ *New Orleans Medical and Surgical Journal*, IV: 681-82, 1847-48.

⁶ Brickell, "Biographical Sketch of Erasmus Darwin Fenner, M.D.," p. 407.

guished physicians, but had since lapsed into indolency. Until 7 years previously, he stated, there was not a single medical journal published south of Kentucky, with the result that few Southern medical men had recorded their experiences and observations. He hoped that the *Southern Medical Reports* would provide "a cheap and substantial medium, through which [the] labors [of Southern doctors] may be united, interchanged among each other, and handed down to posterity." He reasserted his thesis that the diseases and medical practice of the South were distinct from those of other areas, but assured his readers that he had no "desire to see developed any sectional feeling beyond the strict proprieties of a laudable competition."⁷

Although Louisiana was best represented in the two volumes of the *Reports*, Fenner was able to get contributions from nearly all the Southern states. In the first volume four articles came from Alabama, three from Georgia, five from Mississippi, four from South Carolina, two from Texas, and one from Tennessee. Of the thirteen essays on Louisiana medicine, Fenner personally wrote seven. The wide range of medical topics covered in the two volumes must have amply fulfilled Fenner's intention of providing a vehicle for sharing Southern medical experiences and information. Although there was ample need for such a publication as the *Southern Medical Reports*, the generally low academic standards of medical schools and the isolation of most rural Southern practitioners worked against Fenner's venture. Short of subscribers and unable to bear the cost of publication himself, Fenner regretfully conceded defeat with the issuance of the second volume for the year 1850. History has accorded Fenner the credit that his contemporaries withheld from him, for the *Southern Medical Reports* is considered one of the standard sources for an understanding of ante bellum Southern medicine.

In December of 1853, Doctor Hester, who had since become the sole proprietor

and editor of the *New Orleans Medical and Surgical Journal*, fell prey to cholera during the great epidemic of that year, and Doctor Fenner temporarily assumed charge of the *Journal*. However, in the March issue of 1854, he announced that he was retiring from the editorship for a second time. He stated that he had hoped to become the editor and proprietor, but that he had been unable to do so on reasonable terms.⁸

During the ensuing years he continued to write articles and pamphlets, but did not enter the editorial field again until 1857. In the meantime, competition for the *New Orleans Medical and Surgical Journal* had appeared in 1854 with the founding of the *New Orleans Medical News and Hospital Gazette*.⁹ This journal, purporting to speak for "Young Medicine," was aggressively in favor of reforming medical education, raising professional ethical standards, and supporting the cause of the South in the developing sectional conflict. A sharp rivalry characterized the relations between the two medical journals because the older periodical, which was in effect a spokesman for the Medical Department of the University of Louisiana, generally took a more conservative view of proposed educational reforms and at the same time sought to play down the issue of sectionalism.

It was only natural that Doctor Fenner would be drawn to the new periodical. Late in 1857, two of the three staff members withdrew, and Fenner was invited by the remaining editor, Dr. D. Warren Brickell, to serve as assistant editor, a position which he was happy to accept. Both Fenner and Brickell were on the staff of the New Orleans School of Medicine, a thriving institution founded by Fenner in 1856. In his first editorial Doctor Fenner said that, although both editors were connected with a medical institution, they had "resolved that our Journal shall be devoted chiefly to the general advancement of Medical Science, and

⁸ *New Orleans Medical and Surgical Journal*, X: 701-2, 1853-54.

⁹ *New Orleans Medical News and Hospital Gazette*, 7 volumes (New Orleans, 1854-61).

⁷ E. D. Fenner (ed.), *Southern Medical Reports*, I:5-10, 1849 (New York, 1850).

that it shall not be the mere organ of a sectional party or medical clique."¹⁰ No doubt the editors were sincere, but even a cursory scanning of the editorials leaves no doubt as to where their sympathies lay.

Until the outbreak of war ended publication of the *New Orleans Medical News and Hospital Gazette*, its columns constantly urged a drastic revision of the curricula and teaching methods in medical schools. The educational recommendations of the American Medical Association were given full publicity and strong editorial backing. At the same time Fenner, from his editorial chair, continued to argue that the existence of a distinctive Southern medicine required that Southern medical students be educated in Southern medical schools.

Despite the fact that he found himself among the leaders of sectional medicine, Fenner deeply regretted the growing schism between North and South. As his friend and biographer Doctor Brickell expressed it, Fenner became quite despondent over "the utterly corrupt condition of political parties, the aggressive tendency of the Northern mind, and the sensitiveness, jealousy, and anxiety of the people of the South." When South Carolina seceded, Fenner was shocked and surprised, feeling that the action was "unwise and hasty." Believing that civil war was the greatest calamity that could befall his country, he opposed secession in Louisiana. Nevertheless, like many Southern moderates, he placed loyalty to his state first, and henceforth dedicated himself to the service of the Confederacy.¹¹

Once fighting broke out in Virginia, Doctor Fenner proceeded to the battlefield at his own expense to give aid to the Louisiana sick and wounded. On August 23, 1861, in conjunction with Dr. Felix Formento, he organized the Louisiana Soldiers' Relief Association for the purpose of establishing and supporting a hospital in Richmond to care for Louisiana volunteers. In addition to providing medical care, the As-

sociation aimed to keep a record of the dead, wounded, and missing, to receive and forward letters, and to help the troops in any way possible.¹² Soon a 300-bed hospital for enlisted men and a smaller one for officers were in operation. In its first financial report the Association mentioned that \$5,500 in contributions had been received by January 1, 1862, and that over \$1,400 of this sum had been personally raised by Doctor Fenner.¹³

When New Orleans fell to the Union forces in the spring of 1862, Doctor Fenner, who had returned to the city, decided that he was obligated to remain there to care for his many patients. However, his refusal to take the required loyalty oath to the United States led to his expulsion in May of 1863. He spent the remaining war years serving in the military hospital at Mobile, Alabama. At the end of hostilities, he was compelled by ill health to move to Canton, Mississippi. A long period of rest improved his physical condition, and in 1865 he returned to New Orleans. There he found everything in a state of confusion, the medical schools closed, all medical publications shut down, and his personal affairs in a deplorable condition. Undaunted he set to work remedying the situation. Within a year he had reopened the medical school and founded his third and last publication, the *Southern Journal of Medical Sciences*. This strenuous activity proved too great and was undoubtedly a contributing cause of his death in the spring of 1866.

The two greatest contributions of Doctor Fenner were in the fields of medical literature and education. The two are closely related, particularly in Fenner's case, because he so strongly espoused the cause of educational reform in his editorials and other writing. Although he is best known for his literary work, it well may be that his greatest influence was in the field of medical education.

¹² *Louisiana Soldiers' Relief Association, and Hospital, in the City of Richmond, Virginia. Established August 21st and 23d, 1861* (Richmond, Va., 1862), pamphlet in the Rudolph Matas Medical Library of Tulane University.

¹³ *Ibid.*

¹⁰ *Ibid.*, IV:485-87, 1857-58.

¹¹ Brickell, "Biographical Sketch of Erasmus Darwin Fenner, M.D.," pp. 418-19.

One of the foremost motives in establishing the American Medical Association was the hope of improving the ethical and educational standards of the profession. Hence it is not surprising that Doctor Fenner should have been one of the delegates to the initial meeting held in New York on May 5, 1847. Rather interestingly, his official position was that of a delegate from Mississippi. Fenner was leaving on a trip through the Eastern part of the country when the Mississippi State Medical Society asked him to assist in representing their organization.¹⁴ He was the only Mississippi representative present when the meeting opened, and as a result was selected as the Mississippi delegate on the national committee. Fenner wrote that he was later given a similar commission from the Medico-Chirurgical Society of Louisiana, "but it came to hand too late for the purpose designed."¹⁵

While on his extended tour, he visited a number of hospitals and medical schools, concerning which his comments are worth noting. In Boston he met the editor of the *Boston Medical and Surgical Journal*, as well as Drs. John C. Warren and Jacob Bigelow. The Massachusetts General Hospital greatly impressed him, but, after mentioning that in 1845 it had admitted only 453 patients and discharged 400, he declared: "Thus, you perceive that this institution, the only one of the kind about Boston, although richly endowed and elegantly managed, presents but a limited field for medical observation, in comparison with our large Charity Hospital, which receives annually about 6,000 patients, exclusive of lunatics."¹⁶

The notorious rowdiness of early medical students is probably reflected in Doctor Fenner's comment on the Medical School of Pennsylvania University: "As I remarked, the lecture rooms in this college are spacious, and are furnished with the same kind of plain hard benches, that try the stamina of

the *nares and spinous processes* of medical students in other similar institutions. A little more comfort might be easily added to these halls, but I am told it is altogether forbidden by the known *destructive propensities of young Americans*." Speaking of the University of Pennsylvania's rival, Jefferson Medical College, Fenner was highly complimentary although he made one criticism: "I cannot but think there are serious obstacles and disadvantages necessarily attendant upon very large classes; but I will not dwell upon the subject in this place."¹⁷ Because Fenner always advocated the clinical method of teaching, undoubtedly he had this in mind when questioning the value of large classes.

The Pennsylvania Hospital and Blockley Alms-House were also on his itinerary. The former, he wrote, was a fine institution, but much inferior to the New Orleans Charity Hospital with respect to the number of patients. While Blockley was much larger, Fenner felt it was located too far from the two medical schools to be of real benefit. He also noted at Blockley that the eight medical students in residence were compelled to pay a \$75 admission fee plus another \$200 for board, whereas in Charity ten students were "admitted, boarded and lodged, free of expense."¹⁸

Fenner had hoped to visit medical schools in the South, but a shortage of time prevented him. He stopped off briefly in Mobile and had a good word to say about the doctors there. "They show," he said, "the best evidence of a proper regard for the true interests of the profession, by shunning, as they do, the rage for establishing medical colleges, that seems to pervade the whole country. They know that a fair compensation is not to be obtained for *properly qualifying* a small class of young men for the degree of Doctor of Medicine—they could not reasonably expect to get a large one, amidst the multitude of schools—and they, therefore, commendably devote their whole time to the study and practice of their pro-

¹⁴ *New Orleans Medical and Surgical Journal*, III:121, 1846-47.

¹⁵ E. D. Fenner, "Brief Notes on a Medical Tour in the United States," *ibid.*, pp. 195-96.

¹⁶ *Ibid.*, p. 201.

¹⁷ *Ibid.*, pp. 204-5.

¹⁸ *Ibid.*, pp. 206-7.

fession." His remarks about the Mobile medical men led Doctor Fenner into stating his own views on medical education. Medicine, he declared, "is a science of observation, so far as it is a science at all; and cannot be taught, either by lectures or books." Emphasizing the point, he added, "Disease must be seen, ere it can be known." It was impossible for a physician to "impart by words his skill and discrimination in the treatment of disease;" it could only be done, he added, "at the bedside of the patient."¹⁹

Throughout the succeeding years Doctor Fenner continued in his writings to stress two points; first, the distinctive nature of Southern medical practice, and second, the necessity for the clinical teaching method. At the same time he supported all proposals to increase the course offerings in medical schools and to lengthen the school term. As the slave issue gradually divided the Union and sectional spirit mounted, Fenner found his views on Southern medicine receiving wider and wider support. Louisiana newspapers were quick to seize upon the need for a Southern medical education as an argument against sending medical students North. The *New Orleans Bee*, for example, on one occasion asserted in its editorial columns that medical men "must study the pathology of the South in the South."²⁰

Meanwhile the population and wealth of New Orleans were increasing by leaps and bounds. The city received more than its share of the world-wide prosperity of the 1850's, and its ascendancy among the Gulf Coast ports was unquestioned. The flood of immigrants, many of whom arrived sick and destitute, taxed the facilities of Charity Hospital to the utmost. An average of over 12,000 patients was admitted annually to Charity during those prosperous years.²¹ With the demand for qualified doctors

steadily increasing, to Fenner and a number of other New Orleans physicians it seemed a tragic waste that the unmatched facilities for clinical study in the hospital were not fully utilized.

Doctor Fenner was a man of restless energy, and, although his talents had been channeled largely in the direction of journalism during the previous years, in 1855-56 he turned them toward education. For him the time was propitious: the *Southern Medical Reports* had been unsuccessful, and he had failed in his attempt to take over the *New Orleans Medical and Surgical Journal* after the death of Doctor Hester in 1853. With two first-rate medical journals in the city, there was obviously no room for a third; hence Doctor Fenner sought a new outlet for his organizational skill.

By the spring of 1856 he had organized a tentative faculty of ten men for a proposed new medical college. The group immediately applied for a charter and began preparing to open school in the fall. A site was purchased directly across from the Charity Hospital, and construction was started on the college building.²² The prospectus was published widely in Louisiana and other Southern states. Doctor Fenner himself held the position of dean and professor of principles and practice of medicine.

The promotional campaign for the new school, the New Orleans School of Medicine, stressed the fact that the institution offered four new features. The first was the clinical method of teaching; insofar as possible, the prospectus stated, the bedside of the patient was to serve as a lecture room. A second feature was a new chair on the diseases of women and children, a subject usually taught by the professor of obstetrics. A third innovation was the addition of an extra month to the school term, extending it to 5 months. The last feature was a free dispensary where students could gain practical experience.²³

¹⁹ *Ibid.*, pp. 211-12.

²⁰ *New Orleans Bee*, November 12, 1850.

²¹ Exact figures are available in the *Annual Reports of Charity Hospital*, published yearly in New Orleans. They also can be found in the *New Orleans Medical and Surgical Journal* during these years.

²² *New Orleans Daily Delta*, May 18, 1856.

²³ For contemporary descriptions of the college, see advertisement in the *New Orleans Medical News and Hospital Gazette*, II (December, 1855), and an

The ideas of Doctor Fenner and his faculty closely followed the recommendations that the American Medical Association had been urging in vain for the past 9 years. The *New Orleans Medical News and Hospital Gazette*, which espoused the cause of the new college, stressed the progressive nature of its curriculum and teaching methods, and by implication disparaged the Medical Department of the University of Louisiana. The latter institution had been in operation for over 20 years and had gained added prestige by its connection with the state university. Always rather conserva-

tive, it made no effort to meet the threat of competition, but clung to its 4-month school year and continued the even tenor of its ways.²⁴

Having assumed heavy financial responsibilities, Doctor Fenner and his cohorts awaited the opening of the academic year, 1856-57, with some trepidation. Happily their fears proved groundless. An initial enrollment of 76 students, an unusually large class for a medical school, assured the success of the school.

At this auspicious moment the college received what might have been a disastrous

editorial in the same issue, pp. 620-21. Another editorial appeared, *ibid.*, III:735-38, 1856-57.

²⁴ John Duffy, "Sectional Conflict and Medical Education in Louisiana," *Journal of Southern History*, XXIII:297-98, 1957.

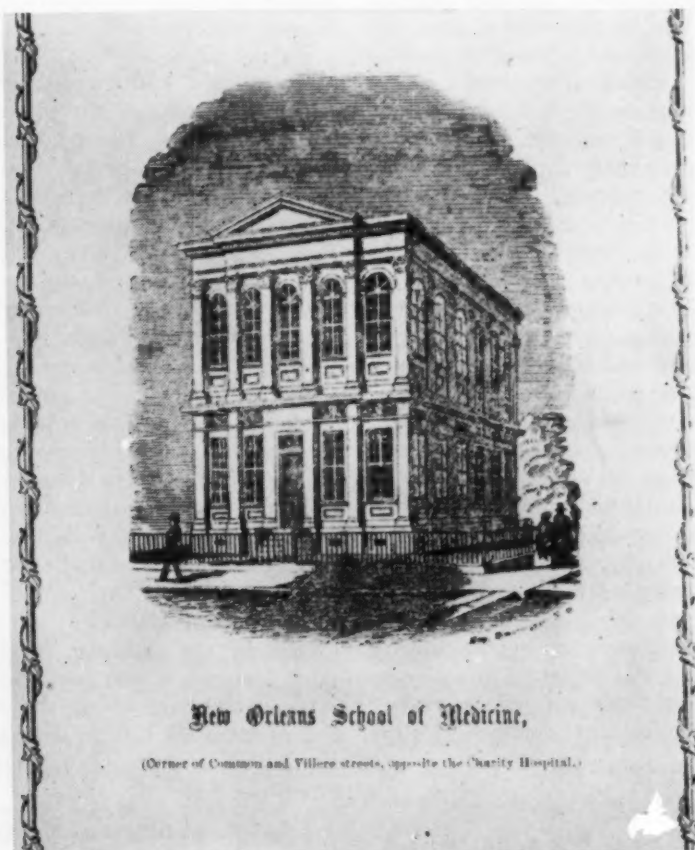


FIG. 2.—Building of the New Orleans School of Medicine (corner of Common and Villere Streets, opposite the Charity Hospital), established in 1856.

blow when the University Medical School insisted that its position as a state institution and its prior agreement with the Charity Hospital had given it a monopoly on the hospital's facilities. Faced with this threat, Fenner left his lecture room and administrative duties and became an effective lobbyist. He was aided in his arguments by the obvious fact, as one of his colleagues wrote later, that the Charity Hospital provided "a mass of material which could not be legitimately consumed by three large colleges."²⁵

The efforts of the University to maintain its monopoly irritated the legislators and actually helped Fenner's cause. Not only was he able to secure from the legislature the right for his institution to grant degrees and have access to Charity Hospital on an equal basis with the University, but also he was able to obtain an appropriation of \$20,000 to enlarge the college buildings and museum. In return for the legislative appropriation, the New Orleans School of Medicine agreed to maintain a free dispensary open 3 days a week for a period of 10 years, and to provide a free scholarship for one poor medical student from each parish.²⁶

In the ensuing years the enrollment at Fenner's institution steadily mounted. Beginning with 76 in 1856, the student group rapidly increased to a peak of 236 in the year 1860-61.²⁷ Although the developing sectionalism played a supporting role in the success of the college, there can be little doubt that it would have won a place for itself even without this assistance. By introducing a systematic method of bedside teaching, Doctor Fenner and the New Orleans School of Medicine rightfully deserve credit for pioneering in the field of clinical instruction.

²⁵ Brickell, "Biographical Sketch of Erasmus Darwin Fenner, M.D.," pp. 411-13.

²⁶ *Acts Passed [by] . . . the Legislature of the State of Louisiana, 1857*, Act no. 96, pp. 74-75, Act no. 165, pp. 154-55; see also *New Orleans Medical News and Hospital Gazette*, IV:33, 1857-58.

²⁷ These figures are taken from the annual circulars of the college published in the *New Orleans Medical News and Hospital Gazette*, 1856-61.

A fine picture of the school's teaching methods was given by Doctor Fenner in an article in which he compared and contrasted the standard teaching procedures with those used in his own institution. The customary procedure in medical colleges was for the students to visit the hospital twice a week. On these occasions the professor, followed by a crowd of students, would walk through the wards giving a running commentary upon the various cases encountered. The New Orleans School of Medicine, however, assigned students to individual patients. Each student was required to keep a complete case history of the patients assigned to him, closely observing all symptoms and effects of treatment until the patients were discharged or died. When discussing a terminal case, the professor was expected to "declare his opinion of the pathology of the case, the seat of the disease, and the morbid conditions to be found." A post-mortem examination was then to be made before the students.

Obstetrical cases in the dispensary were assigned to advanced students who were to visit the patient at home and assist during labor. In the event of any difficulty, the student was expected to call on his professor for help. Dean Fenner was justly proud of the clinical teaching methods of his institution, and he was well within his rights in claiming to head one of the most progressive medical schools in the country.²⁸

Striving to keep abreast of the latest developments in medicine, Fenner encouraged his faculty to specialize. In 1857, Dr. Anthony Peniston, the adjunct professor of anatomy, was appointed to the chair of physiology and microscopy after he had returned to Paris for additional work under his former professors, Claude Bernard and Charles Robin. An announcement in November of 1857 reporting Doctor Peniston's return stated that his "Experimental, Microscopical and Chemical Physiology will be a

²⁸ E. D. Fenner, "Remarks on Clinical Medicine," *New Orleans Medical News and Hospital Gazette*, IV:458-72, 1857-58.

prominent part of the curriculum of studies in the new school."²⁹

The same year, Dr. Austin Flint, a prominent American physician and teacher, was appointed to the chair of clinical medicine, auscultation, and percussion.³⁰ An-

²⁹ *Ibid.*, pp. 301-3, 352.

³⁰ A. E. Fossier, "History of Medical Education in New Orleans," pp. 436-37.

other step forward was taken in 1860, when the chair of surgery was divided into two distinct chairs, one called "clinical and operative surgery," and the other, "principles of surgery and surgical pathology."³¹

By 1860, however, time was running out for the South. The decision of the Southern

³¹ *New Orleans Medical News and Hospital Gazette*, VII:205-6, 1860-61.

**NEW ORLEANS
SCHOOL OF MEDICINE,**
Situated on Common Street, opposite the Charity Hospital.

The Regular Course of Lectures in this Institution will commence on
MONDAY, the 15th NOVEMBER, 1858,
AND CONTINUE TWENTY WEEKS.

FACULTY.

ERASMUS M. FENNER, M. D., *Professor of Theory and Practice of Medicine.*
 ANTHONY A. PENISTON, M. D., *Professor of Physiology.*
 AUSTIN FLINT, M. D., *Prof of Clin. Med. and Auscultation and Percussion.*
 THOMAS PENISTON, M. D., *Emeritus Prof. Clin. Med. and Aus. and Percussion.*
 SAMUEL CHOPPIN, M. D., *Professor of Surgery.*
 ISAAC L. CRAWFORD, M. D., *Professor of Chemistry and Medical Jurisprudence.*
 HOWARD SMITH, M. D., *Professor of Materia Medica and Therapeutics.*
 JOHN M. W. PICTON, M. D., *Professor of Diseases of Women and Children.*
 D. WARREN BRICKELL, M. D., *Professor of Obstetrics.*
 CORNELIUS C. BEARD, M. D., *Professor of Anatomy.*
 J. F. GRALL, M. D., *Demonstrator of Anatomy.*

The Dissecting Rooms will be opened on the 15th of October. Clinical instruction will be given daily in the wards of the Charity Hospital, and three times a week at the College Dispensary, where the patients number about one hundred a week.

The College is located within thirty steps of the Charity Hospital, an advantage not possessed by any other in this country.

The Faculty of this Institution are amongst the duly elected Visiting Physicians and Surgeons of the Charity Hospital, and, according to a late Act of the State Legislature, "shall at all times have free access to the Hospital, for the purpose of affording to their Pupils practical illustration of the subjects they teach."

The Board of Administrators elect annually, in April, twelve Resident Students, who are furnished board and lodging in the Hospital; and the Students of this School are equally eligible to this place with any others.

The great aim of this Institution is, not only to thoroughly indoctrinate the Student of Medicine in the fundamental principles of Medicine by abstract Lectures, but, by drilling him daily at the bedside of the sick man, to send him forth at once qualified to recognize and to treat Disease. For this great purpose, the Charity Hospital, situated at our very door, affords opportunities unequalled in this country. The distinguished abilities of Prof. A. Flint, both as a lecturer and writer on Clinical Medicine, will here find an admirable field for display.

Dissecting material is abundant in New Orleans, and Practical Anatomy will be thoroughly taught. Besides spacious, well-ventilated and well-lighted Dissecting Rooms for the use of Students, a large and well-arranged Private Dissecting Room is fitted up for the especial use of practitioners who matriculate in this Institution.

The Professors will take pleasure in aiding the Students to procure cheap and comfortable board and lodging.

Amount of Fees for the full Course of Lectures.....	\$106 00
Matriculation Fee (paid but once).....	5 00
Dissection Fee.....	10 00
Graduating Fee.....	25 00

For any further information, address
 E. D. FENNER, M. D., *Dean of the Faculty,*
 NEW ORLEANS, June, 1858. No. 5 Carondelet street.

FIG. 3.—Advertisement for the New Orleans School of Medicine during a period of increasing enrollment

states to secede from the Union brought an end to an era, and among the institutions that crashed to the ground was the New Orleans School of Medicine. As young Southerners took up arms, the enrollment in 1861 fell from 232 in the previous year to a low of only 32 students. Handicapped by losses of both students and faculty, the college managed to keep going until 1862, when the occupation of New Orleans halted medical education. Doctor Fenner managed to revive the school when he returned to New Orleans after the war, but his death shortly thereafter was only one of many blows that struck the institution. His friend and associate, Dr. D. Warren Brickell, managed to keep the college going for 5 years before it finally closed its door permanently in 1870.

During its brief existence the New Orleans School of Medicine won for itself a respectable place among American medical colleges. In terms of enrollment it ranked seventh in the country, in 1860. With a progressive administrator, a first-rate faculty, and access to the best clinical material in the United States, the college was undoubtedly headed for a long and distinguished career. Had circumstances been different, it might well have been that Doctor Fenner's fame would have rested primarily on his leadership in medical education. As it turned out, the demise of his college permitted his work in medical journalism to overshadow his vital and tangible contributions to the development of medical education.

Doctor Fenner's range of medical interests extended to almost every facet of medicine. He was a faithful and constant member of all the early Louisiana medical societies of his day, and his attendance at the New York meeting of the National Medical Convention (as the first meeting of the American Medical Association was known) has already been noted. In 1849, for example, he was an active member of the American Medical Association, the Physico-Medical Society of New Orleans, and the Louisiana State Medical Society, and a corresponding member of the State Medical

Society of Mississippi, the Medical Society of Montgomery, Alabama, the Attakapas Medical Society (Louisiana), and the New York Academy of Medicine.²²

In the Louisiana State Medical Society he served as chairman of various standing committees, was chosen as the corresponding secretary at the organizational meeting in 1849, was elected to the office of president on March 15, 1853, and was elected treasurer the following year.²³ In the American Medical Association he represented Louisiana on several occasions, contributed to the *Transactions*, served as chairman of several standing committees, and held the office of vice-president.²⁴

Fenner was one of the leading sanitarians of his day. In the second volume of the *Transactions of the American Medical Association* he contributed an article entitled "The Yellow Fever Quarantine at New Orleans" in which he set forth his belief in the unity of fevers, a concept which held that all the great febrile diseases—yellow fever included—were merely forms of the common fevers, modified by local conditions. Granting this thesis, it was logical to assume that yellow fever was not imported. Hence, he wrote: "As for the *old delusion*, that yellow fever is brought into New Orleans from the West Indies, Vera Cruz, or any other place, and might be kept away by quarantines, I need only say that the experiment has long since been fairly tried, and it signally failed."

His solution to the problem was one that had never been given an adequate trial in New Orleans—an effective sanitary program.²⁵ Throughout his career Fenner set forth these ideas in article after article and editorial after editorial; his folly about quarantine and the unity of fevers does not detract from his pointed contribution in

²² Fenner (ed.), *Southern Medical Reports*, I: title page, 1849.

²³ *Ibid.*, I: 254-55; *New Orleans Medical and Surgical Journal*, IX: 826-27, 1852-53.

²⁴ *Transactions of the American Medical Association*, VII: 21, 1854; XI: 39, 41, 1859.

²⁵ E. D. Fenner, "The Yellow Fever Quarantine at New Orleans," *ibid.*, II: 623-34, 1849.

helping to awaken the residents of the Crescent City to the need for cleansing the Augean stables.

Apropos his staunch advocacy of municipal cleanliness, he submitted an article on bubonic plague to the *New Orleans Medical News and Hospital Gazette*, in 1856. In a brief introduction he declared that yellow fever and plague were "nothing but the most malignant forms of endemic fever, in their respective regions. . . ." Yellow fever, he continued, had been expelled from Northern cities by rigidly enforced sanitary measures, and these measures offered the only hope for the South. In making a strong plea for a full-scale sanitary program he concluded: "If we had some despot like Mehemmed [sic] Ali, to compel us to save ourselves from untimely destruction, we should, in this respect at least, be better off than in our present state of popular sovereignty, where there is no supreme will and power to guard and protect the public welfare."³⁶

Doctor Fenner's words were prophetic. From 1862 to 1865, New Orleans was ruled by the Federal government as a military district. The city's reputation as a notorious plague spot was all too well known, and General Benjamin F. Butler and his Provost Marshal James Bowen were determined to use every means possible to protect the health of the Union soldiers. Consequently, all sanitary and quarantine laws were rigidly enforced. In connection with this policy, the foul, stagnant ponds scattered throughout the city were drained; the notoriously filthy street gutters were flushed out with fresh water pumped in from the river; and adequate provision was made for the removal of sewage and garbage.

For 4 years New Orleans enjoyed an almost unprecedented freedom from yellow fever and other epidemic diseases, and by so doing started a postwar debate, repercussions of which still resound today. Embittered Louisianians in the 1860's and 1870's were reluctant to give even the slightest credit to General Butler, the *bête*

noire of New Orleans. Consequently, logic was strained to the utmost in an attempt to find reasons other than General Butler's measures to account for the four salubrious years enjoyed by the city.

Dedicated Southerner though he was, Doctor Fenner knew facts when he saw them. Shortly before he died, he wrote an article on the sanitary conditions of New Orleans under the military occupation; in that paper he stated that during the first year of military control he had never seen the city so clean. In connection with what he described as the Herculean task of cleaning up the city, he declared: "nothing short of military despotism would have accomplished it," a statement that accords remarkably well with one he had made some ten years earlier. Possibly in hopes of bestirring the lethargic city government, he quoted Provost Marshal Bowen to the effect that "there were no special military regulations to maintain the cleanliness of New Orleans—the Ordinances of the local civil authorities passed before the rebellion, were rigorously enforced, and this enforcement was, in the main, sufficient to secure thorough cleanliness."³⁷

When Doctor Fenner wrote these words, his time was rapidly running out, yet there appears to have been no lessening in the hectic pace of his life. As a matter of fact, his last few months were ones of intense activity. As will be recalled, he returned from his exile in Mobile to find his personal affairs—and those of the city of New Orleans—in a desperate condition. The long years of war had impoverished the South in general and set back the economic and cultural development of New Orleans by more than a generation. Doctor Fenner's first step was to apply to the military authorities in July of 1865 to regain possession of the college building, which had been taken over for use of Negro school children.³⁸

³⁷ E. D. Fenner, "Remarks on the Sanitary Condition of the City of New Orleans during the Period of Federal Military Occupation, from May 1862 to March 1866," *Southern Journal of Medical Sciences*, I:22-23, 37, 1866.

³⁸ *New Orleans Daily True Delta*, July 26, 1865.

³⁶ *New Orleans Medical News and Hospital Gazette*, II:499-501, 1855-56.

Although his first request was refused, eventually he succeeded. Assembling a faculty of nine members, six of whom had served prior to the war, he was able to reopen the New Orleans School of Medicine on November 16, 1865. The enrollment amounted to 84 students, 30 of whom were listed as graduating on March 16, 1866.³⁹ Meanwhile, Doctor Fenner had successfully lobbied a bill through the state legislature exempting the school from taxation, but had failed in an attempt to secure an appropriation of \$10,000 for his school.

Not content with the major task of reestablishing the medical school, he undertook the work of restoring New Orleans to its position as a leading center for Southern medical publications. When the *New Orleans Medical and Surgical Journal* failed to resume publication in 1865, Fenner swung into action. In May of 1866, the first issue of the *Southern Journal of Medical Sciences* made its appearance. In the opening editorial Fenner wrote that he had hoped someone else would have assumed the responsibility. "It has not been done, however," he concluded, "and we now buckle on the harness once more, determined to do our humble part towards the maintenance of a southern medical literature, and opening wide the door for all our brethren to do likewise."⁴⁰

Doctor Fenner did not realize it when he wrote these words, but his work was almost done. He had never fully recovered from his sickness in 1864, and his labors in the months following the war proved too strenuous. On May 4, 1866, following a short illness, he died. It was a fitting tribute that the first issue of the last medical journal published under his auspices should have appeared in public coincidentally with his death.

³⁹ New Orleans Times, November 16, 1865; New Orleans Daily Southern Star, March 17, 1866; Annual Circular, New Orleans School of Medicine, 1866-67, pamphlet in Butler (family Papers [E]), 1866, Louisiana State University Department of Archives.

⁴⁰ Southern Journal of Medical Sciences, I:187-89, 1866-67.

Dr. D. Warren Brickell, who had been closely associated with Doctor Fenner in his medical education ventures and publication enterprises, endeavored to carry on Fenner's work at the New Orleans School of Medicine and on the *Southern Journal of Medical Sciences*. However, the University Medical School had reopened its doors with the backing of the legislature, and in July of 1866, the *New Orleans Medical and Surgical Journal* resumed publication.

Impoverished by the years of war and faced with rebuilding its social, economic, and political institutions, the State of Louisiana could not afford two schools and two journals. With state aid, the Medical School of the University of Louisiana, later to become Tulane University, managed to survive. The prestige accruing from years of publication, plus support from the University professors, enabled the *New Orleans Medical and Surgical Journal* to struggle through the long Reconstruction period. On the other hand, the New Orleans School of Medicine and the *Southern Journal of Medical Sciences*, relying solely upon private sources of income, found themselves in a desperate position. The *Journal* ceased publication after only 1 year; the medical school managed to remain in operation for 5 years before it, too, followed the medical journal into oblivion.

Erasmus Darwin Fenner spent only a little over 20 years in Louisiana, but he left an indelible stamp upon its history. One of the journals he established still survives today, and his extensive writings are a major source for historians of the ante bellum South. In his own day he was one of the most influential Southern physicians, and he rightly deserves credit for helping to arouse Southerners from their apathy toward public health. His influence was felt to an even greater extent in the field of medical education, an area in which his own institution demonstrated the feasibility of radical reforms. It was his ambition to be useful to mankind, and in this he succeeded far better than he himself could have envisioned.

Improving the Teaching of Radiological Anatomy through Demonstrations with Transparent Diazo Overlays*

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Normal human anatomy as revealed by the x-ray film is accepted today as an important aid in the teaching of anatomy to medical students. The purpose of this article is to describe a simple method of offering demonstrations of anatomic principles from x-ray films. It can be used equally well in the teaching of clinical radiology. The method itself can be used for any demonstration in which it is desired to present an unaltered photograph, photomicrograph, or compli-

cated drawing or graph but yet reveal simplifying instructional material by means of an absolutely clear overlay.

METHOD

1. Radiographs are selected which are particularly good to reveal one or more features of normal anatomy (Fig. 1).

2. A simple diagram in India ink is made which shows the exact position and configuration of the anatomic feature to be presented. A tracing made over a transilluminated radiograph is the most convenient way of making the diagram. Tracing over the x-ray film insures obtaining the precise location and configuration of the structure to be represented. The tracing must be made on a lightweight white layout or tracing paper, because it must transmit illumination in its transfer to the acetate film by means of the diazo process duplicating machine (Fig. 2).

3. The inked tracing, bearing the necessary titles and labels, is inserted into the diazo processing machine. The diazo process machine exactly duplicates upon an acetate film the material of the original tracing. A color to the instructional material is determined by the dye which is present in the acetate film. Blue has been found to be the

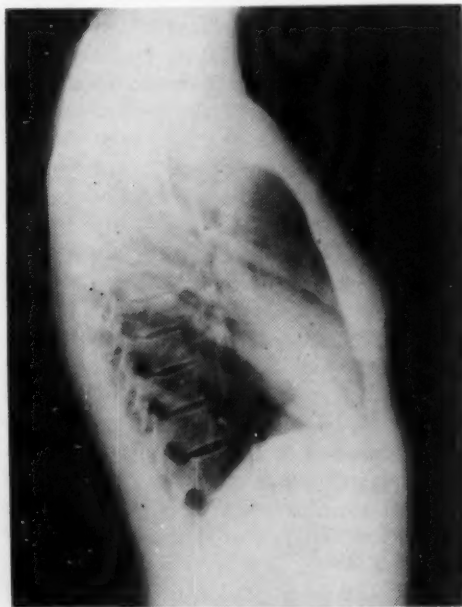


FIG. 1.—A typical radiograph photographed by transmitted light upon an x-ray illuminator.

* Presented as a scientific demonstration at the Seventh International Congress on Anatomy, New York, April 11-15, 1960.

† Individual Member, Association of American Medical Colleges; Associate Professor of Anatomy, Marquette University School of Medicine; and Director of Medical Education, Evangelical Deaconess Hospital of Milwaukee.

best color, because it is clearly visible and does not obscure the radiographic shadows nor blend with them as does black. Red, brown, and yellow do not appear clearly. The diazo duplicating process is a common technique used widely in offices for copying purposes, for rapid quality duplication of all sorts of graphic material, and in intermediate stages of many publishing processes. Many art and photographic departments of medical schools have these machines, since the process is becoming a standard way of making lantern slides, charts, and exhibit transparencies more rapidly and easily than with other methods. If no machine is available, agencies making copies for business purposes can duplicate the illustrative material by this method.

4. The finished overlay is bound to the surface of the x-ray film in such a way that it may be easily lifted. Double-faced pressure-sensitive transparent tape applied to the top edge has been found to be the best binding material.

5. The completed unit of x-ray film and its attached overlay bearing instructional material is placed upon an illuminator in the anatomy laboratory (Fig. 3).

DISCUSSION

The beginning medical student does not know what to look for in an x-ray film. It must be remembered that radiological anatomy represents the first-year students' first contact with x-ray principles. By this means one feature of normal anatomy can be brought to the attention of the student. He can now lift an overlay, flip it back and forth, and learn how to recognize structures in a radiograph without the aid of an overlay. The same radiograph can be used a number of times with different overlays when it is desired to present a number of different features. In this way a series can be placed in a view box to reveal a number of features of a complex picture.

This method overcomes a number of disadvantages of current techniques of demonstrating radiological anatomy. In other methods diagrams and tracings may be

placed adjacent to an unaltered x-ray film resulting in the necessity of eye movements from one to the other. The inexperienced students may have considerable difficulty in locating the morphological feature on the x-ray itself. Marking of the x-ray itself adds to the confused pattern which the beginning student sees on a radiograph. Extra lines,

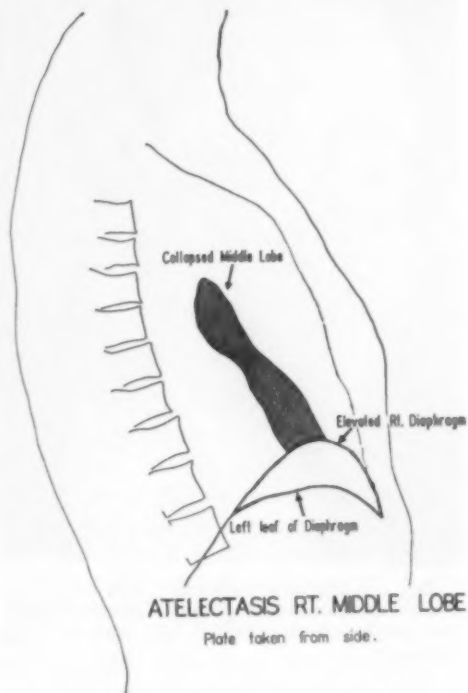


FIG. 2.—Photograph of the inked tracing made from the same radiograph. "Zip-a-tone" used for the cross-hatching.

arrows, and labels distract the eye from the point being demonstrated. A major disadvantage is that the addition of illustrative material to the x-ray film alters the x-ray itself so that the student, once oriented, cannot view the patterns in their original form. Most methods of creating overlays have had the disadvantage of obscuring the radiograph beneath to some degree. The method presented here results in an absolutely clear overlay in which this objection does not occur.

There is a disadvantage in having a radi-

ologist present a lecture-discussion of lantern slides and x-ray films to the students if the students never see illustrations of the lecture again. The same x-rays used in the lecture, with the method presented herein, may become a demonstration placed in the anatomy laboratory where the first-year

The selection of the radiographs to be used in such demonstrations should be made by the radiologist. Since this is an interdisciplinary venture the anatomist should cooperate in the selection and in advising the artist what to show in the diagram which becomes the illustrative material of the overlay.

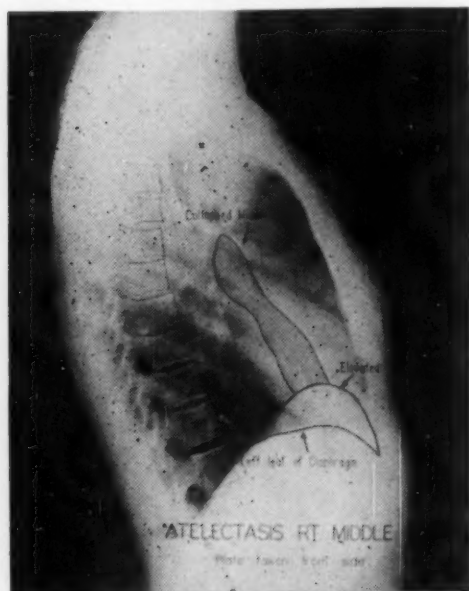


FIG. 3.—The same radiograph with its acetate overlay, made from the tracing in Figure 2, in place. Photographed by transmitted light upon an x-ray illuminator.

medical student can refer to them and learn how to read radiographs under the guidance of a visiting member of the staff of the department of radiology.

Radiologists are enthusiastic teachers who appreciate such an opportunity to introduce the fundamental principles of radiology very early in the curriculum in the process of presenting radiological anatomy.

SUMMARY

The use of the diazo duplicating process to create completely transparent acetate overlays which bear instructional material is described. The stages of production in this simple technique have been described briefly. Suggestions for the use of these demonstrations in interdisciplinary teaching have been discussed. The simplicity of the process recommends it as a teaching method and for a variety of exhibit purposes such as complicated photographs, drawings, and graphs.

ACKNOWLEDGMENTS

The development of this method has been the result of the cooperation of a number of persons. Acknowledgment is made to S. Archibald Morton, M.D., Clinical Professor and Chairman of the Department of Radiology for encouragement, guidance, and the selection of appropriate radiographs. Acknowledgment is also made to Leo C. Massopust, Sr., Director, and Robert Teevan of the Department of Art and Photography for technical assistance. Mr. Michael Marodick of the Department of Illustration, Columbia Hospital, Milwaukee, made the original tracings upon which this article is based. Stanley Weinreb, Ph.D., of the Department of Anatomy suggested the use of the diazo process.

NOTE

The technical details for preparation of the overlays are discussed in the *Journal of the Biological Photographic Association*, May, 1960.

German Medical Education: Observations of a Participating American Student

GEORGE ANDROS, M.D.*

University of Chicago, Chicago, Illinois

In the early decades of the twentieth century it was always a good piece of roundsmanship if the young doctor or even the professor could begin his comments with: "Well, when I was in Vienna we did it this way." He was almost as impressive if he could casually quote the European literature. This having been the case, one needs only to look in the bibliography of an American textbook or in the journals to see that we have left an era behind. Often the only foreign reference one will find is the first description of a disease—recorded in the early nineteenth century.

Even considering the two facts that the United States is the current (though not unchallenged) world leader in medical care and research, and that we have always been somewhat isolationistic, it was a pleasant surprise to find that medicine is still being practiced in Europe, and rather well at that.

Germany, with its rich medical heritage, was never visited for a protracted stay by William Osler, and this may explain the many significant differences between the German and American undergraduate medical educational systems. The increasing interest of American medical students in foreign study has been paralleled by an increasing opportunity to undertake this study during undergraduate elective periods. Since the German-speaking countries are sure to be high on the list of those to be visited, I would like to discuss the general aspects of German medical education and comment on German medical students.

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ADMISSION REQUIREMENTS

For admission to a university, which constitutes admission to the medical curriculum, the student need only be a gymnasium graduate. In the Gymnasium the student can elect to enter the course in the arts, science, business, or a trade. Besides languages, which begin with English in the fifth grade in grammar school, the student takes courses in mathematics (often including differential equations) and the natural and social sciences. Physical education courses are also included. A knowledge of Latin is required of the German medical student. If this requirement is not fulfilled in the Gymnasium, a so-called *Small Latinum* must be completed in medical school before the final preclinical examination, the *Physicum*. The Gymnasium takes in the first years (one or two) of an American college and in order to graduate the student must pass the final exam, the *abitur*. When he finishes the well disciplined and controlled studies of the Gymnasium the *abiturient* is about 19 years old. There are two final requirements for entrance into a university: the student must be in good health, and he must be able to pay his tuition.

FINANCES

All the universities are government-owned, and the tuitions are low—\$50 per semester, \$100 (400 German marks) per year. Books are numerous but expensive. American and English texts are seldom, if ever, used by students. Teachers and residents, however, commonly refer to standard texts such as Friedberg's *Diseases of the*

Heart and Wintrobe's *Clinical Hematology*, as well as American and English periodicals.

Students are able to meet their financial obligations in a number of ways. Stipends are offered by federal agencies, and university and private funds are available to students ranking highest in a qualifying examination. These provide from part tuition to full tuition and partial living expenses. Student loans, though available, are seldom used. The frequent American practice of being supported by—or supporting—a wife is seldom seen, and only 10 per cent of graduating medical students are married. Night-time externships in small community hospitals or jobs as technicians are not available to students, and very few students maintain jobs during the semester time.

For foreign students, funds are available through one of several federally supported agencies such as The German Academic Exchange Agency. Funds from these groups are given to capable and needy foreign students, and repayment is usually not required.

THE MEDICAL SCHOOLS

There are about twenty universities in West Germany, many of which, i.e., Bonn, Heidelberg, Munich, Frankfurt, Cologne, and Hamburg, are internationally known. Every university has a medical faculty which includes Medicine (Internal Medicine, Pediatrics, Obstetrics-Gynecology, Surgery, etc.), Dentistry, Pathology, Anatomy, Biochemistry, and the other basic sciences. Graduate study and research are actively pursued in these fields.

Besides the universities there is also a medical academy at Düsseldorf which is associated with the city hospital and offers only the clinical courses. Düsseldorf, where the author had the pleasure of studying for 4 months, is a relatively young school, having been founded by Johann Conrad Brunner (of Brunner's glands fame) in 1708. A large university such as Munich may have as many as 1600 medical students enrolled in the eleven medical semesters, while a smaller one like Tübingen may have 600.

The total medical school program can be completed in $5\frac{1}{2}$ years or 11 semesters. There are 2 semesters per year, the first from November 1 to March 31, and the second from May 1 to July 31, totaling 7 school months per year. There is a 2-week break for the Christmas holidays.

In West Germany there are about 12,000 to 12,500 medical students. Of these 30 per cent are females. Ten per cent of the total medical students are foreigners (many are from Persia and the Middle East) who return to their home lands upon graduation. About 2500 new doctors are graduated every year.

THE PRECLINICAL CURRICULUM

The preclinical requirements are met in 5 semesters, during which the student takes only lecture courses in zoology and botany. Lecture and laboratory courses in physics, chemistry, anatomy, physiological chemistry, and physiology are also required. In anatomy (which includes gross, neuro-, and microscopic anatomy), the student must take periodical practical examinations and receive a written statement upon satisfactory completion of the course. Similar written approval, without examination, is required for physiology and biochemistry.

The student has still another interesting preclinical requirement. Before the third semester he must work on the wards for 2 months as a *pfleger*, an orderly, with some nursing responsibilities such as giving injections, changing beds, etc. The student cannot proceed into the clinical semesters without this training, and if he somehow does advance without it, he must serve this time before he is allowed to graduate.

When the student has finished the 5 preclinical semesters and has acquired the necessary certificates in anatomy, etc., he is eligible to take the *physicum*, his final oral and practical exam on these subjects. If the student fails it the first time, he may repeat it after taking one additional semester. If he fails it again, he must repeat the entire 5 semesters in order to again be eligible. Few, if any, are willing to face

this final prospect, and the *physicum* claims a mortality of 30 per cent of all those students starting the program. Up until this exam very few students drop out, and of those that pass almost no one subsequently quits.

THE CLINICAL CURRICULUM

Six, and on occasion 7, semesters are devoted to the clinical subjects. The following is a breakdown of the hours compulsory for every student in the specialty and sub-specialty fields:

Specialty Fields	Hours
Internal Medicine	434
Surgery	419
Pathology, including gross, microscopic, and pathological physiology	310
Obstetrics and Gynecology	279
Hygiene including microbiology	248
Pharmacology and Toxicology	155
Pediatrics	124
Ophthalmology	109
Psychiatry and Neurology	93
Dermatology and Syphilology	78
Ear, Nose, and Throat	78
Medical Jurisprudence and Social Medicine	62
Diagnostic and Therapeutic Roentgenology	62
The History of Medicine	62
The Elements of Dentistry	62

The following breakdown of hours is extracted from the American Medical Association study of Medical Education.¹ It briefly summarizes the average allotment of hours in the third and fourth years in the median five schools surveyed. It does not represent any one school except by coincidence.

Specialty	Hours
Pharmacology	165
Microbiology	225
Pathology	310
Medicine	945
Surgery	770
Pediatrics	430
Obstetrics and Gynecology	465
Psychiatry	210

Roughly 15-25 per cent of the hours in the last five listed (from Medicine to Psychiatry) are spent in "whole-class" exercises. These exercises are primarily lectures in the junior year and clinical conferences, CPC's, etc., in the senior year.

¹ J.A.M.A., 161:1646-48, 1956; *ibid.*, 165:1413-15, 1957.

It is interesting to note that subjects which we consider to be preclinical courses such as Pathology, Pharmacology, and Hygiene are included in the German clinical semesters. Physical diagnosis and history-taking are introduced at this time. So are the routine hematological techniques (WBC, RBC) with which the students never gain a significant degree of competence.

It is also worth noting that the German time breakdown provides for a significant amount of time to be spent on the History of Medicine and Medical Jurisprudence.

Just how are these allotted hours spent? The student learns clinical medicine through four avenues.

First, and most importantly, the hours are spent primarily in the lecture hall. Students attend lectures on the various subjects, at which time patients are presented. Members of the audience are called forth to do the pertinent physical examination (before their classmates), and the professor uses these findings as a starting point for the discussion of a particular disease or family of diseases. Often two, three, or four patients who demonstrate the various stages of a disease are presented in a 1-hour lecture. The lecturer may also present patients with unrelated diseases, or may give a purely didactic lecture dealing with the classification of disease, differential diagnosis, laboratory diagnosis, or pathological physiology. The plan of the lectures may vary, but the lecture system as the primary tool in undergraduate clinical training is ubiquitous.

Because of the predominant role played by the lectures, a few comments on the lecturers are in order. At the head of each clinic (medicine, surgery, pediatrics, etc.), there is only one *Ordinarius* (full professor) who serves at the same time as chairman. He is followed in the hierarchy by a few *extraordinary* professors (associate professor) who are at the same time *Oberaerzte* (senior attending physicians) of the clinical wards and who give the introductory lectures, lectures on the sub-specialties and conduct the courses in physical diagnosis. The *Do-*

zents (assistant professors) are also occasionally *Oberaerzte* of the clinics. They give one or two lectures per week and the *Stationsaerzte* give none at all. This system was called by one young *Stationsarzt* the *Tannenbaum* system because of its sharp point.

The lectures, like lectures everywhere, run the gamut from very good to very bad. On an average they are rather good, well prepared, and interestingly delivered. Sleeping students were in conspicuous absence, even though the average student attends from five to seven 1-hour lectures per day. Often there are three or four lectures going on at a given hour, as well as several card games and Ping-pong games.

Secondly, every student is required to spend 3 months of vacation time during the course of his 6 clinical semesters as an extern on the wards. These 3 months may be taken at the student's prerogative, either after his first clinical semester or before his last. Notably, the externship may be in any specialty or subspecialty of his choice for any period of time over one month in length. The students are free to take more time as a *famulus*, extern, and frequently do so.

During this time the externs take histories, do physicals, assist with laboratory procedures not done by technicians, and, most importantly, attend rounds. In surgery the student has the same responsibilities and can occasionally scrub-in as the third or fourth assistant. There is a saying that the student holds the retractor and his mouth. No formal examination is given at this time, but the student must receive a certificate from a staff member of associate professor standing, or above, which states that his work was satisfactory or unsatisfactory as the case may be. The externship must be taken at a university or academy hospital during the vacation period. As a rule, students like to take a part of their externship early in the course of their clinical semesters in order to make the lectures during the semester more meaningful. The *Stationsarzts*, the low men on the *Tannenbaum*, play an important, though unheralded, role

in the externs' education during these vacation externships.

Thirdly, work in the polyclinic (out-patient department) is available in limited amounts to advanced students in the form of a course which runs one morning per week for one semester. Here the student works up and treats the routine ambulatory patients.

The fourth clinical experience is a group of courses called clinical rounds in which the students make ward rounds with various attending men and are presented the instructive and interesting cases. This is in the form of beginning and advanced rounds.

Two education methods commonly employed in the American educational system are in conspicuous absence from the German curriculum. The first of these is the clinical conference. A medical conference is held once every 2 weeks, at which two or three interesting cases are presented and discussed; however, it is aimed at the house staff, and one rarely sees a student in attendance. There are conferences for the house staff in the various sub-specialties in their own clinic buildings. There are no CPC's. The student seminar-discussion group, though not required, is being employed with increasing frequency besides being used in the students' doctorate thesis program.

There is in one sense great uniformity among German universities. They must offer lectures and courses in specific subjects so that the student can meet the Federal requirements at any medical school, interchangeably. Yet, in another sense, the curricula can be quite different. If the professor of medicine or surgery is especially interested in one particular sub-specialty (and invariably they all are) the entire lecture program is slanted toward this field. Furthermore, it is common knowledge among professors and students alike as to which centers are strong in which subjects.

This interchangeability and diversification bring up a fascinating innovation of German training which seems to underline the emphasis on liberal and independent

training. Not only are students *not* required to take all their education at one university, but they are encouraged to transfer from one center to another. Since the lecture is the principle educational tool, the student can accomplish this transfer with a minimum of difficulty. Essentially, it would be equivalent to having all the lecturers from one center shifting to another. Theoretically, the student can spend each of his eleven semesters at a different university. In practice, the student transfers perhaps one time in the preclinical and once or twice in the clinical semesters. From a technical point of view this is relatively easy, since the student need only register in the new university. He also presents a certificate which shows that he was registered for the previous semester, which courses he has completed, and which remain to be taken. No examinations other than the *physicum* are required.

STUDENT RESEARCH AND THE DOCTORATE

About 50 per cent of medical students write a doctorate thesis in medical school. The work is undertaken with the direction of a professor, who usually assigns a topic for investigation. The students usually carry out nonexperimental programs and review the literature on a subject or collect the clinical statistics on a given disease. Often laboratory basic science research is undertaken by the student. Upon completion, the student must present his work for acceptance to a panel of three professors, one of whom directed the students project. The doctorates are seldom published in the medical journals, though parts of them may be used by the professor, with acknowledgment, in a larger published work. Of the remaining 50 per cent of students, about 45 per cent write their doctorates during their internships and another 3 per cent at some later date. About 2 per cent do not write a doctorate and are not eligible for the title of *Doctor med.* They are called "mister" by their colleagues and patients.

THE *Staats* EXAMINATION

The *Staats* (State) examination is really not a state exam, since the examining doctors (professors) and the examination subject material is determined by the individual university or academy. The government specifies "who" shall be examined, i.e., those who have satisfactorily completed the eleven semesters, and where these candidates shall be examined, i.e., in university hospitals. The faculties determine "how" he shall be examined. The student can choose the examining faculty, and usually chooses one where he knows the professors and is perhaps known by them. There is no formal national or federal agency which serves to establish a national standard through examination. Furthermore, there is no question of state reciprocity.

After joining in a group of two to four students who take the 3-month examination together, paying his \$50 examination fee and donning a formal black dress suit in which the student is identified as a medical candidate, he begins the examination. The candidates are examined for 4 days in medicine and surgery, as well as for shorter periods of time in every subject in which clinical lectures were required. In medicine, for example, the candidate works-up one patient completely (except laboratory work) and does a write-up which includes differential diagnosis, presumptive diagnosis, and therapy. He may refer to textbooks at home, and the following morning he is quizzed on the patient. The second afternoon the candidate is quizzed during the course of clinical rounds. Here questions of diagnosis and therapy are leveled. The third day the professor sits with the student and quizzes him on some theoretical problems. Questions on pathological physiology, as well as topics such as the interpretation of laboratory tests and blood smears, are considered. The final day is spent in working-up two or three patients and discussing them without a write-up.

The candidate has a considerable amount of free time during the *staats* exam in which

to prepare for the almost daily questioning. The outcome of 5½ years' work is decided in this 3-month period, and naturally it is a tense one. As opposed to the *physicum*, which is failed by 30 per cent of the examinees, very few students fail this exam. The few that do invariably take an extra semester and pass the re-examination. The candidate is then eligible to begin a 2-year internship and thereafter to practice.

THE INTERNSHIP

All medical graduates are required to take a rotating internship lasting 2 years. Internships in university hospitals and academies are the most highly sought after and are available to only 10 per cent of the graduating doctors. These interns are chosen by their especially good performance in the *staats* exam, or by their early manifested research abilities. The great majority of graduates intern in the various city hospitals and some in the private hospitals. The following is a breakdown of the required internship rotation plan:

Specialty	Months
Surgery	6
Medicine	6
Obstetrics-Gynecology or Pediatrics	3
Electives	9

The time on medicine and surgery must be spent on the general services, and training in the sub-specialties is taken in the 9-month elective period. During the internship, as in medical school, the doctor is encouraged to take his training at more than one hospital, and most interns average two or three.

It goes almost without saying that it is during the internship when the doctor receives his first concentrated exposure to clinical medicine on the wards. The intern is allowed to do as much as the adequacy of his abilities permit. He is responsible for keeping the charts up-to-date and is gradually given more responsibility for ordering diagnostic tests and instituting therapy. At the end of the internship the doctor is permitted by law to establish his own practice, for the last exam given in German medicine is the *staats* exam.

RESIDENCY

With internship behind and *no service obligation* ahead, about 40 per cent of doctors enter a residency program. The residencies in internal medicine and general surgery are 5 years in length and can be taken at any hospital at which the director has completed a residency in the particular specialty. Here again, the university residencies are the most difficult to obtain.

In medicine, for example, the resident must spend 6 months on roentgenology and may spend up to one year out of his specialty in research, psychiatry, or a field of his choice. Of the remaining 3½ years he must spend a stipulated amount of time on a TBC ward and must serve as a *Stationsarzt* ward doctor, directly responsible for the care of the patients on his ward. He is assisted in the execution of his duties by the younger residents and interns. Business and teaching rounds are made from one to three times per week by the *Oberarzt*, depending on the competence of the ward doctor. During brief morning meetings with the director of the clinic, diagnostic problems and deaths are presented. "Grand rounds" by the clinic director are made every 1 or 2 months and serve as general "inspection" rounds. A general surgery residency includes not only work in the various sub-specialties but 1 year in internal medicine as well. The German medical graduate, with or without specialty training, who chooses to go into private practice of course will have a much easier start in a small town or country practice, and many younger men start out on their own this way. The subject of private medical practice in Germany with its socialized health insurance is too complex a theme to treat in this educational survey.

STUDENTS AND STUDENT LIFE

After the closely disciplined Gymnasium program the university life is marvelously free and independent. Most students choose to live in apartments or with private families, because university housing is considered to be too restrictive and is somewhat limited in quantity. Like students everywhere, Ger-

man medical students live inelegantly and inexpensively. They maintain an active interest in cultural events with the help of student discount tickets and have a warm enthusiasm for sports, especially football (soccer). Being general university students, they can and do engage in inter- as well as intra-university athletic competition.

Student organizations exist at a university and national level and provide educational, travel, and skiing opportunities for the students. These organizations are popular and effective. There are also medical student societies in which the students are able to arrange educational and social functions together.

Upon graduation only 10-15 per cent of students are married. Most students feel that it is wiser to wait until internship to marry. This underscores in part the fact that the internship in Germany is not as physically trying as in the states. The less-trying internship also explains, in part, why so many females enter medicine.

Though the practice of reading professional journals is rarely begun in medical school, the near necessity of writing a doctorate thesis increases student interest in German as well as world literature. The thesis also produces the favorable effect of stimulating student interest in research pursuits and careers in academic medicine.

Direct professor-student contact except through the preparation of the doctorate thesis and the *staats* exam is relatively small. Because the majority of instruction is in the lecture form, the student may attend or absent himself as he sees fit. The lectures seemed to be well attended. The practice of students' stamping their feet when the professor enters the lecture hall has given way to rapping on the desks. Similar commendation is conferred upon lecturers when they get off a particularly funny story or deliver a good lecture.

I found German medical students to be eager and able. They are at times critical of their brief pre-graduation exposure to actual clinical work. They enjoy discussing medicine but do so infrequently, feeling

that their knowledge gleaned from textbooks and lectures does not give them a basis from which to speak. Medical bull sessions and mealtime discussions about patients are conspicuously absent.

DISCUSSION

An instructor who had taken a part of his residency in the United States made the following comparison of German medical education and academic medicine: He believed that American education is patterned after a large family business, and the German is patterned after the military. In view of what he called the *Tannenbaum* system of professors, the comparison is an apt one.

"Is it true that in America the doctors do not rely very heavily on physical diagnosis, and therefore do excessive numbers of laboratory procedures to establish a diagnosis?" I was asked this question in the early part of my stay in Düsseldorf by a visiting Scottish student. It was later echoed by German students and doctors alike. My answer, which was "No," subsequently proved to be correct, since I saw medicine being practiced essentially as it would be in any university-run publicly owned hospital in the states. In fact, it became my impression that, concerning reliance on laboratory exams, we do fewer such tests than in Europe, availability being equal.

The criticism that American medicine is "too specialized" was always a subject for lively and endless discussion. The discussion would usually be brought to a "favorable" conclusion by mentioning that many doctors in southern Europe go to Germany, where medicine is "more advanced," to learn the latest in their particular specialty. Similarly, those German doctors who have the chance come to the United States.

SUMMARY

In a comparison of the German and American systems of undergraduate medical education, many significant differences are readily discernible. These differences begin with admission requirements, which stipu-

late that the prospective German student only need be a certificated Gymnasium graduate. About 10 per cent of entering students are foreign citizens, and about 30 per cent are females, many of whom ultimately enter pediatrics or obstetrics and gynecology.

In medical school the student is allowed a great deal of freedom. During the preclinical semesters he is introduced to the widely used lecture system. The *physicum*, the cumulative exam at the end of the 5 preclinical semesters, is almost the only exam up to that time, and is passed by 70 per cent of the students taking it.

The students going on will find lecture and laboratory courses in pharmacology, pathology, and microbiology, as well as physical diagnosis and history-taking, taught with the traditional clinical subjects such as internal medicine, surgery, etc. Students attend five to seven clinical lectures per day. Though these lectures constitute the primary teaching tool, they are supplemented by courses in clinical ward rounds and work in the OPD. Furthermore, every student

must work a total of at least 3 months as an extern on the wards in the specialty of his choice during his vacations. After satisfactorily finishing six clinical semesters the student is eligible to take the *staats* exam, enter a compulsory 2-year rotating internship, and then practice or continue his training in a residency program. The *staats* exam after medical school is the last exam required, since none is required for specialty board membership. Up through and including residency, about 95 per cent of students write a doctor's thesis. Differences in the professorial systems are noted.

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Study-Skills Courses in Medical Schools?

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For a number of years, this journal has contained reports of various new teaching methods used in departments of medical schools, as well as reports of redesigned curricula affecting an entire medical school. These new teaching programs are of interest to all concerned with medical education, and indicate that curricula are continually undergoing close scrutiny. These changes, primarily concerned with evaluation and alteration in teaching techniques, offer a unique opportunity to reassess the curriculum in terms of the role of the learner. More specifically, measures directed toward improving the efficiency and scholastic effectiveness of medical students are worthy of consideration. The purpose of this review is to point out that medical students might benefit from short study-skills courses especially tailored to fit their needs, and to summarize evidence that exists relating to this proposal.

It has long been taken for granted that factors other than aptitude influence achievement in medical school, and fortunately one can assume that most medical students are probably well motivated. On the other hand, little notice has been taken of study habits of medical students, although there is ample evidence that study habits can also be significant determiners of achievement (4, 5). Persons who score high on study-habits inventories achieve significantly higher than would be expected on the basis of aptitude results alone. At first thought, it might seem that medical

students, being a highly select group, possess good study habits when they enter medical school. There is little justification for this assumption, although evidence on this point is neither as direct nor as extensive as one would like.

Sheldon (21) reports, for instance, that only three of sixteen freshmen and sophomore medical students tested by him read as well as the average college freshman before a program in remedial reading was begun. There is voluminous evidence that college students may be exceedingly poor readers (3, 25), and it is probable that these deficits in reading skill persist into medical school because students *do not* increase their reading rates in college unless a regular program is undertaken (12). Of all study skills, reading has been by far the most extensively studied.

Investigation of under- and over-achievers (identified by discrepancies between aptitude and grades) demonstrates that under- or over-achievement tends to persist as students progress through school (11). *Different* tests are needed to measure study mechanics at different educational levels, however, and so different study methods are probably necessary for different kinds of schools. Thus a college course in study skills may have little utility at higher levels. Most suggestive is the fact that Robinson (19) found superior students to have no better study skills than average students, although the superior students were highly select in terms of intelligence, present knowledge, and previous scholastic record.

All in all, it seems plausible that medical students may not possess optimal study

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habits, although further research is needed on this issue.

Evidence from college courses.—Over the years more and more colleges have instituted study-skills courses, and a recent survey (2) reports that 90 per cent of colleges and universities offer such courses, at least to selected groups. Data to evaluate the effectiveness of these courses have been lacking until rather recently. (Their advocates have initiated and supported them more on the basis of intuition than empirical evidence.) The published data regarding the effectiveness of such courses was recently reviewed with encouraging findings (8). Before recounting these findings, it is pertinent to digress briefly and discuss some peculiarly troublesome problems of design related to these evaluations.

The only adequate criterion to measure improvement following a study-skills course is improvement in over-all scholastic average as measured from a baseline established by a "suitable" control group. Ancillary data, such as improvement on reading tests or study-habits inventories, are valuable, but need to be interpreted very cautiously because (a) they may not correlate very well with the grade average and (b) they are frequently misinterpreted because of regression toward the mean. It is crucial that the control group be "suitable," i.e., matched on intelligence and probably other attributes, and preferably equally motivated.

In the past, favorable results from college courses have been seriously questioned, because it was thought that students volunteering for study-skills courses might merely be more highly motivated than students not volunteering; therefore, gains following a course might reflect heightened motivation rather than the influence of the course. Fortunately, all studies (2, 13, 20, 23) so far reported that control on motivation as well as intelligence substantiate conclusions of earlier, less well controlled studies. The consensus is that desire to participate probably enhances the effect of a study-skills course, but increased motivation alone is an insufficient condition for significant im-

provement to occur. For instance, Smith and Wood (23) studied the influence of motivation extensively by using two control groups. One group was composed of students desiring to enroll but unable to do so, and another group was composed of a representative sample of comparable students not wishing to enroll. They report significant improvement of the trained group over *both* control groups.

A total of nineteen evaluations of college study-skills courses is reported in the literature, and all note improvement following the courses, although the amount of improvement varies (8). It should be borne in mind that these uniformly positive findings are subject to bias in reporting, however, because positive results are probably more likely to be published than negative results. That negative results have been obtained and not reported is substantiated by a survey (7) to which one college responded that two controlled studies had shown a course to be ineffective. Nevertheless, even with a pessimistic viewpoint, one must agree that positive results have been obtained on many occasions, with many kinds of students, and following many kinds of courses.

One can question the *amount* of improvement, because at times results of statistical significance are too small in absolute magnitude to be of practical significance. It is difficult to comment on this, because the grading schemes in various schools are so diverse; but the modal gain in over-all average seems to be about 0.40–0.50 of a grade-point (Table 1). It can be concluded that gains from such courses at the college level are often large enough to command considerable interest. It is noteworthy, too, that improvement is almost always maintained when follow-up studies are done.

A medical school study-skills course.—Evaluations of college courses suggest that medical students might benefit from similar courses, but, since different skills are required at different educational levels, it is probable that a successful course for medical students must be especially designed for

them. College courses of very short duration (7 hours) have been found to be beneficial, and indeed long courses (one or more semesters' duration) do not seem more beneficial, although admittedly so many variables are operating that a relationship between length-of-course and effectiveness might be obscured. At any rate, it would seem advisable to try a short course first.

ing of medical material are (a) attention to the logical divisions of chapters indicated by section headings; (b) interpretation of figures and graphs; (c) survey of the preface and bibliography. A recent review (16) of 20 years' experience with reading training at Harvard College suggests that students' "strategy" in reading may need improvement—i.e., often reading assignments are

TABLE 1
MAGNITUDE OF GAINS FOLLOWING STUDY-SKILLS COURSES*

Study	Kind of course	Size of gain
Barbe (1)	Reading, vocabulary, study habits; 5 hr/week for 12 weeks.	About half a letter grade
Charles (6)	Reading, general study methods, library and term paper skills, test-taking skills, diagnostic testing; 10-week laboratory course	0.47 letter grade (?)
Kilby (10)	Reading only	15 centile points from 35th to 50th centile on class distribution
McDonald (13)	Reading only	2.5 percentage points
McGinnis (14)	Reading, general study skills; 15 weeks	0.56 points in point-hour ratio (probably equal to $\frac{1}{2}$ letter grade)
Mouly (15)	Reading; 3 hr/week for 1 semester	0.42 letter grade
Ranson (18)	Reading, individual testing, study habits, eye movements; varying from part of 1 semester to 3-4 semesters	0.43 letter grade
Robinson, H. (20)	"Remedial instruction"; 21 hr. over 10 wks.	1.6 percentage points
Simpson (22)	Counseling, reading, "other skills"	0.22 to 0.30 letter grade
Smith & Wood (23)	Reading only	0.25 letter grade
Tresselt & Richlin (24)	Lectures on study techniques, group sessions of "free expression," plus individual sessions totaling 2-30 hrs.	For some sub-groups: 2.3 to 3.3 percentage points
Wiley & Thomson (27)	Reading only	0.40 letter grade
Winter (28)	Discussion of study methods for 2 hr/week plus 7 hr/week supervised study	54% average C or better vs. 23% for controls
Wittenborn (29)	Approximately $\frac{2}{3}$ reading, $\frac{1}{3}$ study methods; 2 hr/week for 7 weeks	About 0.40 letter grade

* All gains are for trained group over a control group of equal intelligence.

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What should be covered in a course is not certain and can be determined only by empirical investigation. Some clues are available, however. Sheldon's (21) study, alluded to earlier, can be interpreted as negating the value of training in speeded reading for medical students; but this interpretation must be regarded as tentative, since Sheldon worked with a very small group (sixteen students). Other kinds of reading skills, suitable to scientific texts and articles, may have potential value. Special reading skills that might facilitate learn-

undertaken in plodding fashion and with scant attention to the over-all purpose of the assignment.

Reading training should not be dismissed too quickly, since in most remedial reading courses speed is emphasized. Mental test theory (9) supports the notion that speed and power (comprehension) are independent and should be treated as separate entities. An investigation of reading skill focused on this dichotomy (17) concludes that measures of reading comprehension are relatively independent of speed, and establishes a cor-

relation of 0.76 between aptitude and comprehension. With altered emphasis in reading training, i.e., with training directed more toward comprehension and reading "strategy," the outcome with medical students might be more encouraging than previous results suggest.

Most college courses use one of the numerous texts on study skills as a focal point. These texts, for the most part, represent what might be regarded as "expert consensus" and are, therefore, valid guides only to the extent consensus is a valid guide. A topic often treated in these texts is use of the library, and for medical students early introduction to efficient use of the library and bibliographic materials may be efficacious. These texts also point out the influence of writing-legibility on grades and state that enormous increases in legibility may result from improving the formation of only two or three letters.

A number of rather general learning principles are often cited, even though the specifics in certain instances are not very firmly buttressed in experimentation. For instance, the following can be listed: (a) Spaced practice is better than massed practice (problem-solving appears to be an exception); (b) learning is increased when students have a "set" to learn; (c) learning is increased when the learner participates actively (participants in class discussion learn more than nonparticipants); (d) "forgetting" probably has little to do with the passage of time per se, but depends rather on active interference by material subsequently learned; (e) retention can be increased by overlearning, appropriately spaced reviews, and changing the nature of interpolated material to reduce its similarity to previously learned material; (f) of time spent studying, probably as much as 80 per cent should be spent in active recitation as opposed to reading. This list could be considerably extended. There are experiments attesting to the value of specific practice in generalizing principles from one area to another (26) and of specific practice in problem solving.

Some "corollaries" of the above principles

are of particular interest. Practice on a task should as nearly as possible duplicate the actual situation where the task will be tested. Even minor departures from this dictum can lead to "negative transfer." For instance, if a student will be required to describe muscle insertion by groups orally and the groups are to be arbitrarily selected by the instructor, then the student should not "practice" muscle-insertions in alphabetical-order-of-muscles, because he will depend, perhaps unconsciously, on alphabetical cues that will not be there when his instructor questions him. (This would support the use of anatomy cards, one structure per card, to be shuffled by the learner between repetitions.) If a student must present an oral précis of a medical article, he should practice his précis out loud and not content himself with writing it out only.

Reducing the similarity of new material to previously learned material helps reduce retroactive inhibition; most mnemonic devices are based on this idea. The familiar rhyme "On old Olympus' thorny top..." is a mnemonic device for remembering the cranial nerves that capitalizes on the notion of reducing stimulus similarity.

Time expenditure of students can often be improved to increase efficiency. In all complicated tasks there is a warm-up period when efficiency is below maximum; students starting to study can take advantage of this by beginning with relatively easy material so that warm-up is complete before tackling more difficult material. Also, in order not to "lose" warm-up, students should make provisions to handle distractions systematically.

It is not the intent of this review, nor is there space, to catalogue extensively what topics might actually be covered in a study-skills course for medical students, and the above material is intended to be illustrative only. The value of any of the topics mentioned is a moot point until they are tried with medical students. It should be emphasized, too, that the beneficial influences of college courses have not been proved to stem from specific training similar to the

kinds mentioned, and a considerable part of their influence may be owing to counseling of students. A study-skills course may provide very many opportunities for informal counseling by the instructor or even by other students.

SUMMARY

Evaluations of college study-skills courses indicate that improvement in over-all grade averages following these courses is of the order of half a letter grade, and these improvements are usually maintained on follow-up. The slight evidence available, mostly indirect, suggests that medical students probably do not possess optimal study habits and that they might benefit from a short course tailored especially to suit their needs. With widespread revision currently being made in the medical curriculum, the time may be opportune to initiate a controlled study of the influence of such a course.

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The Attitudes of Medical Students toward Their Patients: An Exploratory Study

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The concept that medical students become progressively cynical and less tolerant of patients has been extensively discussed in the recent literature concerning medical education. The interpersonal attitudes involved in the physician-patient relationship are more crucially implicated in the quality of the services rendered than in most other professional-client relationships. It thus behooves us to learn more about the personality and situational factors involved in the students' attempt to learn how to be a physician. The purpose of this paper is to investigate the development of negative attitudes of the medical student toward patients that are assigned to him during the Junior year of his training.¹

In a study by Strecker and his associates (8) it was established that 46 per cent of the medical students at the University of Pennsylvania School of Medicine had neurotic handicaps "of a major character." Similar findings by other investigators gave rise to the hypothesis that the often observed cynicism and negative attitudes toward patients were a manifestation of the neurotic anxiety of the medical student. In two subsequent studies, Eron (3, 4) found that students with cynical attitudes toward patients rated high on an anxiety scale, that first-year medical students tended to have more humanitarian attitudes and

less anxiety than seniors, and that there was a greater increase in cynicism and anxiety in medical students than in a comparable group of law and nursing students. It was assumed that the relatively high anxiety of the medical students resulted from the trauma inherent in medical education (e.g., dissecting the cadaver and witnessing the death of patients), and prolonged economic dependence. Robert Stollar *et al.* (7) regarded negative attitudes toward patients as a defense reaction against the anxiety involved in taking the doctor's role. Confirmation of these findings was provided in a study by McCandless and Weinstein (5). Students whom they characterized as "constricted" (i.e., showing little concern with the emotional problems of their patients and limiting their interest to the treatment of organic factors) showed a progressive rise in anxiety during a series of conferences on the emotional problems of patients. This account bears close resemblance to the "authoritarian" medical student described by Parker (6). Those who scored high on the F-Scale (1) for authoritarianism also had diffuse feelings of hostility, tended to idealize (but at the same time harbored covert resentment against) authority figures, were unable to take a psychiatrically oriented view of themselves and others, were moralistic in their judgments, and viewed human relationships in terms of hierarchical status positions.²

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¹ Junior medical students were selected for study, because it is at this time (at Jefferson Medical College) that they have their first intimate and prolonged contact with patients.

² For those who are not acquainted with the F-Scale for authoritarianism, it should be noted that this psychological test purports to measure personality characteristics and attitudes of the in-

Becker and Geer (2) carried out a careful longitudinal study of a group of medical students over a number of years. They found that students neither became more cynical toward their patients nor lost their original idealism. However, disappointment with aspects of the medical school curriculum and the severe pressures to which they were subjected by the staff led upper classmen to regard and evaluate patients differently than they did as freshmen. Patients were increasingly reacted to in terms of the difficulties they presented to the student in his attempts to perform his role. That is, the patient came to be viewed as an academic problem presenting technical difficulties or providing an opportunity to learn about certain aspects of medicine.

Methods.—In a previous stage of this study, conducted in the Fall of 1956 (6), a randomly selected sample of 118 students of the freshman class were given a questionnaire. Among other items, the questionnaire contained the F-Scale to measure authoritarianism. The students were divided into three categories: 30 students in the nonauthoritarian group, 30 in the authoritarian group, and 58 in the medium category.³ This personality classification of the freshman students was used, in the present study, as the basis for selecting a subsample of this group when they had completed their "medicine clerkship" during their Junior year in 1958-59. Twenty-six nonauthoritarian students and 30 authoritarians⁴ were interviewed with a questionnaire containing both pre-coded and open-ended types of

dividual and has no specific reference to medicine or to the doctor-patient relationship. It has been validated by the use of other psychological test and clinical interviews. For a more detailed discussion of this instrument, see the reference cited above to Adorno *et al.*

³ The group designation "nonauthoritarian" and "authoritarian" are relative terms. Each of these groups was composed of students scoring in the lower and upper quarters, respectively, of the distribution of scores on the F-Scale.

⁴ I was unable to interview four students in the nonauthoritarian group. Two had dropped out of medical school, and two found it impossible to schedule a suitable time for answering the questionnaire.

questions. The clerkships in medicine last for 12-week periods beginning at the onset of the fall semester and continue until the end of the academic year. These clerkships are further subdivided into two sections of 6 weeks each—usually 6 weeks at Jefferson Hospital and a comparable period at an outlying institution. Thus, at the time of the administration of the questionnaire, students in the first section had only 6 weeks of clinical contact with patients; those in the second, 12 weeks, etc.

The findings.—The students were asked to select precoded responses that best described the way they spontaneously felt when dealing with each of seven types of patients⁵: those who were very emotional and voluble, those whose illness was of a psychosomatic origin, those who had a strong need to tell about the many intimate details of their personal lives, those who were uneducated and belong to the lower socio-economic class, those who insisted on asking for details about the diagnosis of their condition or about therapeutic procedures to be carried out, those who tried to become familiar and ask questions about the student's own personal background and life, and those who were aggressive and showed hostility toward the student. There were five possible responses, ranging from "enjoy dealing with them very much" to "dislike dealing with them very much." The precoded responses were each assigned scores and were totaled to give a "hostility" score for each student (Table 1).

An examination of Table 1 indicates that the authoritarian group reports greater hostility than the nonauthoritarians. This was particularly obvious in the high hostility category, which contained 40 per cent of the former group and only 8 per cent of the latter. The two groups differ significantly at the .02 level of probability.

The respondents were also asked (for each type of patient) to describe "the kind of problems such patients create for you

⁵ Anonymity was assured by giving the students code letters which enabled the investigator to identify the group into which an individual fell. Names were not used.

in your attempts to help them," and "what methods and techniques have you developed in your attempts to help them." Such open-ended discussions could yield deeper insight into attitudes that could not be readily verbalized. These protocols indicated that the students' statements concerning their mode of dealing with the various types of patients did provide an alternative means of ascertaining their attitudes. Two psychiatrists having considerable experience in teaching medical students were asked to independently evaluate the responses to the above open-ended questions.⁶ They rated each protocol according to one of the following categories: (a) shows "appropriate" hostility, (b) shows *some* inappropriate hostility, (c) shows *considerable* inappropriate hostility, (d) undecided. The ratings were made without any knowledge of the students' precoded response to the patient or of their position of the F-Scale. Both psychiatrists found considerably more "inappropriate hostility" among the authoritarian students than among the nonauthoritarians. The differences between the groups in each rating series was statistically significant (using the χ^2 method) at less than the .05 level of probability. The correspondence between the distribution of the self ratings of hostility and the independent ratings of experienced judges provided additional evidence that the authoritarian students actually experienced more hostility toward a variety of patients than did those scoring low on authoritarianism.

An attempt was made to learn more about some of the situational correlates of hostile attitudes toward patients. The data were analyzed to ascertain if the amount of hostility was related to whether the student had his section of medicine with ward patients or with private patients. It was hypothesized that private patients, behaving more in conformity with the sub-cultural

middle class values of the medical student, would invoke less hostility than ward patients. The latter appeared to invoke more hostility in the students than private patients. However, the differences were not significant at the .05 level of probability.

To explore this relationship further, we decided to see whether differences would emerge when the responses of authoritarian students and non-authoritarian students were analyzed separately. It was hypothesized that the former would show more hostility toward ward patients than to private patients. Inspection of Table 2 indicates that authoritarian students are considerably

TABLE 1
STUDENTS' RATINGS OF THEIR HOSTILE REACTIONS TO PATIENTS*

Hostility score	Nonauthoritarian group	Authoritarian group
Low (0-4)	14 (54%)	9 (30%)
Medium (6-8)	10 (38%)	9 (30%)
High (10+)	2 (8%)	12 (40%)
Total	26 (100%)	30 (100%)

$\chi^2 = 8.03$.
 $P > 0.02$.

* In all the statistical tables in this paper the values for χ^2 and P will be indicated only when the latter is smaller than 0.05. The table will be marked not significant (i.e., N.S.) when this level is exceeded.

less hostile toward private patients than they are toward ward patients. Nonauthoritarian students showed insignificant differences in this regard. It thus appears that the ward learning situation may have contributed toward "triggering off" hostility in the authoritarian group.

An attempt was made to test the findings, cited earlier, that the students' hostility toward patients will vary directly with the length of exposure to the clinical situation. The total sample was divided into three categories based on the length of total clinical contact with patients during the Junior year.⁷ Differences in the level of hostility did not appear to be related to the length

⁶ I wish to express my appreciation to Dr. Robert Matthews, Professor of Psychiatry and Head of the Department, Jefferson Medical College; and Dr. John Koltes, Assistant Professor of Psychiatry, Jefferson Medical College, for the evaluation of the questionnaires.

⁷ Category 1 consisted of students having from 6 to 12 weeks of contact, category 2 having from 12 to 24 weeks of contact, and category three having from 24 to 36 weeks of contact.

of time that the student was exposed to patients in the clinical situation.

Let us now examine some of the satisfactions or dissatisfactions that the student experienced in the learning situation and in their relationships with patients. They were asked to select one of several precoded responses that best expressed their perception of the amount of independence and responsibility for patient care that they were given. They were further asked to explain the reasons for their choice. It is

statistically significant, it appears that non-authoritarian students were slightly more dissatisfied with this aspect of the learning situation. An analysis of the reasons given for dissatisfaction failed to show any notable differences between the two groups. The major reason for dissatisfaction in both groups was the feeling that their supervisors did not pay sufficient attention to their opinions and case histories. They experienced this as a derogation of their status, complaining of being "kept in the dark" about the details

TABLE 2

THE DISTRIBUTION OF HOSTILE ATTITUDES TOWARD WARD AND PRIVATE PATIENTS*

TYPE OF PATIENT	NONAUTHORITARIAN			Total	AUTHORITARIAN			Total
	Low hostility	Medium hostility	High hostility		Low hostility	Medium hostility	High hostility	
Private	7 (54%)	4 (31%)	2 (15%)	13 (100%)	7 (47%)	3 (20%)	5 (33%)	15 (100%)
Ward	7 (54%)	5 (40%)	0 (0%)	12 (100%)	2 (13%)	6 (40%)	7 (47%)	15 (100%)

* The Chi-square method for obtaining significant differences was not used in this table because of the small numbers in the individual cells.

TABLE 3

THE RELATIONSHIP OF AUTHORITARIANISM AND STUDENTS' PERCEPTION OF THE AMOUNT OF INDEPENDENCE AND RESPONSIBILITY THEY WERE GIVEN

Amount of responsibility and independence	Nonauthoritarian	Authoritarian	Total
Far too much	0 (0%)	0 (0%)	0
A bit too much	2 (8%)	0 (0%)	2
A right amount	12 (46%)	15 (50%)	27
A bit too little	6 (23%)	12 (40%)	18
Far too little	6 (23%)	3 (10%)	9
	26 (100%)	30 (100%)	56 (100%)

N.S.

important to note here that the over-all purpose of the Junior-year clerkship at Jefferson Medical College is to enable the students to elicit historical and physical findings and to evaluate these data in order to arrive at a diagnosis. Senior students are allowed a greater role in the comprehensive care of the patients.

Table 3 shows that the majority of students in both groups appeared to be fairly satisfied with this aspect of their learning experience. However, those who were very critical felt that they had been given "far too little" independence and responsibility; nobody felt that he was given "far too much." Although the differences were not

of the therapy that "their" patients were given and that their advice was not sufficiently considered. One student expressed his feelings in the following manner:

Nothing the student does on the ward is of any consequence in patient treatment... student nurses have much more responsibility than medical students. The student feels very much the fifth wheel.

Some of the desire for more independence and responsibility seemed to stem from the anticipatory anxiety the student experienced when he compared his present lack of training and responsibility with the prospect of soon assuming the full role of physician. One student expressed this very well:

We seem to do very little independently—and to think, we will be M.D.'s in one year. I feel pretty shaky to think of the responsibilities.

The students' perception of the learning situation was probed further by questioning them concerning their feelings about the adequacy of the clinical guidance and supervision in understanding the patients assigned to them. Table 4 shows that the distribution of responses among the two groups is similar. The reasons for the negative responses emerge clearly in the protocols. Only a few of the students complained about the actual quality of the teachers or the academic level of the teaching. The dissatisfied students felt that their histories were not sufficiently "taken into consideration" by senior staff physicians. Once again the problem of "status derogation" emerged. Students reacted with frustration and anger when

TABLE 4

RELATIONSHIP BETWEEN AUTHORITARIANISM AND SATISFACTION WITH THE GUIDANCE AND SUPERVISION PROVIDED BY THE STAFF

Perception of guidance and supervision	Nonauthoritarian	Authoritarian
Very adequate	6 (23%)	8 (27%)
Fairly adequate	6 (23%)	7 (23%)
Fairly inadequate	10 (38%)	11 (37%)
Very inadequate	4 (15%)	4 (13%)
	26 (100%)	30 (100%)

N.S.

denied the status that they so avidly sought, and to which they felt entitled. It is interesting that part of the resentment experienced by students stemmed from differing interpretations of the role of the student at this stage of his development. As mentioned previously, the staff defined the role of the Junior student clerk in terms of learning the problems and intricacies of diagnosis. On the other hand, it appears that many students desire, and feel that they should have, a greater involvement in the therapeutic process. Although the justification for this feeling may be questioned, the fact of its existence leads to some resentment.

A question was asked concerning the students' feelings about the contribution they

made to the treatment of the patients assigned to them during the period of their clerkship. It was hypothesized that the non-authoritarian students, because of their supposedly greater interest in emotional difficulties and greater ability to tolerate deviant behavior, would be able to establish a closer relationship with patients and to feel that they were contributing more to the over-all well-being of their patients. Table 5 shows the relationship between authoritarianism and feelings of contribution to the over-all treatment process. Students in the two groups differ significantly at the .01 level, with the nonauthoritarians evaluating their contribution to treatment as significantly greater than the authoritarians. Whereas

TABLE 5

RELATIONSHIP BETWEEN AUTHORITARIANISM AND STUDENTS' EVALUATION OF THEIR CONTRIBUTION TO THE TREATMENT OF "THEIR" PATIENTS

Amount of contribution to treatment	Nonauthoritarian	Authoritarian
No contribution	2 (7%)	10 (33%)
Fair or small contribution	17 (65%)	19 (63%)
Considerable contribution	7 (27%)	1 (3%)
Total	26 (99%)	30 (100%)

$$\chi^2 = 9.8.$$

$$P = < 0.01.$$

only 7 per cent of the former felt that they had made no contribution to the treatment of the patients assigned to them, 33 per cent of the latter felt this way. On the other hand, 27 per cent of the nonauthoritarians and only 3 per cent of the authoritarians felt that they made a considerable contribution. It is also interesting to note that over 60 per cent of the students in both groups felt that they made either a "fair" or a "small" contribution to the treatment process, even though this aspect of their role was not part of the formal specifications of their responsibilities or functions. An analysis of the reasons given for the responses to this question proved to be enlightening. The differences in the evaluations noted in Table 5 can be explained as qualitative differences in the perception

of the doctor-patient relationship rather than mere quantitative differences along some continuum. The nonauthoritarian students felt that they "helped" their patients considerably by putting them at ease and by providing them with an opportunity for emotional catharsis. In addition, the close relationship they maintained with some patients enabled them to "find out things that proved important" for the treatment efforts of the senior staff. On the other hand, the authoritarian students, for the most part, interpreted "treatment" in terms of direct intervention in organic processes by means of drugs, surgery, etc. Quite understandably, these students felt that their student role precluded *any* therapeutic contribution. The two quotations taken from the responses of authoritarian students are representative of this point of view:

In every case the diagnosis had already been established, therapy instituted, and I was able to uncover relatively nothing new in my examinations.

The patients were a good source of learning material to me. However, regarding my contribution to their therapy, I felt more or less like a technician in that I collected blood in the morning, did routine tests, and often had no time to discuss patients with the staff.

The ability of students in the nonauthoritarian group to establish closer relationships with patients enabled them to obtain greater status recognition from two sources. First, there was recognition from the patients who, in many cases, were the only ones whom the student perceived as treating him with "respect" and "appreciation." Within the context of this relationship, some students felt that they were able to "play the role of physician."

I learned how to step into the role of a physician—quite a transition from the passiveness of being a patient,⁸ and quite a change in responsibility.

I got to know them better than their own physician. I find that patients look forward to

⁸ The word "patient" is a very interesting "Freudian slip" which neatly sums up this student's perception of the "student role."

my visits and often write down questions to ask me.

I exerted a considerable psychological influence on the patients. They seemed to be more at ease knowing that there was someone on the floor who would be there if they needed help.

Aside from this confirmation of their status, more of the nonauthoritarian students also experienced recognition from senior staff members who sanctioned and supported their attempts to establish a close relationship with patients and secure important data. When this recognition was forthcoming, the student felt that he was a colleague (albeit a junior one) of the physician in charge.

The physician seemed to place some confidence in my handling of their patients.

Sometimes residents and senior physicians discussed the case and asked for my opinion as to diagnoses. My ideas and findings were discussed (by the staff), and I was listened to as a member of the ward staff.

In summary, it can be said that the nonauthoritarian students were more frequently the recipients of gratification derived through intimate interaction with the patients, and status confirmation from both patients and senior staff members. This conclusion was strengthened by the further finding that nonauthoritarian students felt that they came to know their patients "as individuals" more often than the authoritarians. The responses of the two groups differed at the 0.02 level of probability.

Summary and conclusions.—By following a sample of medical students from their freshman to their junior year, it was found that the personality characteristics and values they exhibited upon entering medical school had a pronounced relationship to their reaction to patients 2 years later. However, the reasons underlying this phenomenon were more complex and indirect than a mere acting-out of an internalized personality trait. If this were not so, the implications for student education would indeed be dismal. There is relatively little possibility of radically altering the personality structure of medical students during their

training period. However, the very indirectness of the process by which the personality syndrome of authoritarianism becomes manifested in behavior allows us to entertain hopes of effecting changes in the student (physician)-patient relationship.

One of the important potential satisfactions that the student derives from his interaction with patients stems from the opportunity it affords for status confirmation. Although this is certainly not unique to students in the medical profession, it is possible that this group is peculiarly prone to problems in this area. The status that the medical student seeks rests mainly upon his strong need to feel that he is given recognition for helping his patients. It is possible that the very strength of this need, coupled with some of the requirements of medical education, makes for potential vulnerability to attitudes of "toughness" and "cynicism." After 4 years of college and the first 2 years of medical school where contact with patients is relatively slight, he enters his first significant clinical experience with the expectation that he is "really" going to do something for the patients assigned to him. However, he is told that he must still wait before he can take a more active therapeutic role. Thus, the apprentice role of the medical student, which involves working with suffering human beings, strengthens his need (which cannot be completely satisfied) to take a therapeutic role. This problem is probably more pertinent to medical education than to any other type of professional training. In addition, the "emergency" nature of medicine has resulted in a fairly well-defined hierarchical structure in the hospital environment. In this structure, the student frequently feels that he is "low man on the totem pole." This, too, complicates the status problems of the medical student to a degree not experienced by students in most other professions. These problems, plus the "normal" difficulties and trauma of dealing with sick people, having to cope with a demanding academic program, and being in a position of economic dependence for a relatively long period, pile

up to produce the often deplored attitudes of cynicism and toughness.

There are indications that the most important source of status recognition comes from members of the senior medical staff. It is by identification with them, and approval from them, that the students begin to feel like physicians. Since the student role precludes any significant treatment responsibilities, recognition and approval by the senior staff members must be forthcoming in the realm of diagnosis and the adequacy of the students' understanding of, and relationship with, his patients. Unless the student perceives that his supervisors show an interest in his attempt to get to know his patient "as a whole man" and support his attempts to foster a proper relationship with patients, his perception of his own contribution as a member of the therapeutic team is damaged. The needs of the student to play the role of "doctor" can be partially satisfied by a satisfying "professional" relationship with his patient which, in turn, is given due recognition by senior staff physicians.

Students characterized as having authoritarian personalities seek confirmation of their status just as avidly as any of the others. However, their values and personality predispositions make it more difficult for them to establish satisfying relationships with their patients. Thus, a vicious circle emerges involving progressively more annoyance with "difficult" patients. Some of the findings in this study point to the possibility of altering, or at least minimizing, such a development by making the relationship with patients an important area of concern and interest as soon as the student has his first clinical contacts. The satisfaction that the student derives from dealing with his patient is partly conditioned by the extent to which the clinical learning environment of the medical school rewards or ignores this factor.

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Medical Students' Attitudes toward Teachers and Patients*

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The present paper is the direct result of a primary research interest in the role of the nurse in medical education. Although long known to many of the individuals involved, recent studies have highlighted the fact that institutional features and occupational attitudes have often prevented close working relationships between physicians or medical students on the one hand and student or graduate nurses on the other. That this is unfortunate seems obvious for many reasons, not the least of which is the effect on the quality of patient care. In most aspects of diagnosis or management, the two disciplines have skills and knowledge which could best be coordinated for greater advantage to the patient. However, both medical students and nurses, picking up cues from those who teach them, often perpetuate negative and stereotyped views of the associated discipline by assimilating their teachers' attitudes as a part of their training. Such a pattern of attitudes is thus apt to become perpetuated through each new generation of professionals.

We propose to test an innovation which, if successful, could provide a way for altering

this situation, for breaking the attitude-cycle and also for enhancing the education of medical students in nursing aspects of total child care. A qualified pediatric nurse was appointed as an instructor in the Tulane Medical School to assist in teaching junior and senior medical students. Because of her combination of roles we have called her a "nurse-educator." During the first year in this new role, the nurse participated actively in ward, clinic, and classroom activities. She presented formal lectures to students. She participated in ward demonstrations. She also assisted individual students with a wide variety of care routines in order to enhance their appreciation of their place in the total "medical team" as students and later as physicians.

As was anticipated in advance, the introduction of a nurse into this "new" role as an educator and faculty member created alterations in attitudes and relationships among many people with whom she worked. Faculty, house officers, medical students, and nurses were all affected. Though these reactions ranged from simple curiosity and questioning to feelings of hostility, confusion or threat, they seemed to originate from a common source, since her role as a nurse-educator was new and largely undefined.

We were aware that it was necessary to establish baselines for certain existing attitudes among medical students if we were to correctly assess the effectiveness of the nurse-educator and to alter students' attitudes. Two central sets of attitudes were

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those concerned with teachers and patients. It was our expectation that a preliminary inventory of such attitudes could provide clues for a program to make the nurse-educator as effective as possible in teaching students. The larger research is still in process, but we believe that our findings at this time are important to those responsible for medical education.

The results presented here are based on (a) relatively unstructured interviews with a sample of students in one block and (b) questionnaires administered to a subsequent block of juniors and seniors. Upper-class medical students at Tulane are taught in three blocks yearly, to which junior and senior students are assigned by a random procedure. In one of these, the work is divided equally between the Departments of Pediatrics and Obstetrics-Gynecology, with students spending half of their time, approximately 6 weeks, in pediatric work. The random character of the block assignments meant that the students who were interviewed were probably a representative sample of all blocks of students. Hence, our conclusions could be interpreted as applying to a much larger number of students. One form of the questionnaire was administered at the beginning of the block and another at the end. During that period, the nurse-educator lectured to both classes; to the junior students on the working relationships between physicians and nurses on the wards and to the senior group on problems and responsibilities in parent-education. Comparison of answers given at the beginning and at the end of the block indicated that the nurse-educator had had a slight but perceptible effect upon some student attitudes. Her influence was undoubtedly limited by the frequency and type of her student contacts and by the other activities and interests of students in a very active service. Analysis of the interview material suggested that her earlier, informal work on the wards with medical students made a firmer impression than did her formal lectures. Further study is now being conducted along those lines.

The remainder of the paper presents our findings on the attitudes of students toward teaching methods, teaching personnel, and patients.

Teaching methods.—Students were asked to evaluate the importance to them of the different teaching methods used by the Department: lectures, ward rounds, conferences, and clinics, the latter being applicable only to seniors.

The junior students interviewed in the earlier block changed their estimates of these techniques very little between the beginning and the end of their pediatric assignment. Apparently, after the basic science years devoted heavily to classroom lectures and laboratory exercises, they found active participation in ward work most welcome. Their first contact and responsibilities with patients seemingly brought them closer to the images they held of themselves as future doctors. Thus, it was not surprising to find that third-year students consistently and overwhelmingly emphasized the importance of ward activities in the learning process. Ward rounds were never criticized as a method, but occasionally for the relative efficiencies of some staff members in conducting them. Substantially similar conclusions were reached from analysis of questionnaires given in a later block. At the beginning of the pediatric assignment, 40 per cent of the third-year students ranked ward rounds as the most valuable part of their training experience, and after 6 weeks this percentage had risen to 47.5 per cent. No other teaching method commanded as great a proportion of acceptance.

For senior students, conferences and clinics gained in importance over the period of their pediatric assignments. Lectures were rated as less important than ward rounds, clinics, or conferences by both senior and junior students. We gained the impression that those students who ranked lectures highly were those who saw their medical training as a totality depending on all teaching methods.

Teaching personnel.—Another line of inquiry was designed to ascertain from whom

the student felt he learned the most, and in what ways. He was asked at both the beginning and the end of his pediatric assignments to express his views about faculty members, residents, interns, nurses, and other students. Responses from third-year students remained essentially unchanged during their clerkships; the impressions with which they entered were simply reinforced by their experiences. For them, the resident staff provided the most valuable and informative teaching contacts. Without exception, junior students highly valued the residents in their roles as teachers. Interviews indicated that this attitude was closely related to the high estimates students held of ward activities—typically the teaching domain of the resident. This attitude was undoubtedly reinforced by the very frequent contacts that students had with resident physicians in their work on the wards during both their day and night assignments. Understandably also, students felt that the resident staff was far more approachable than others in the academic hierarchy. The intern was seen by most junior students as being less effective than the resident, his contribution to their training undoubtedly being limited by the nature of his assignments in a rotating service.

Just as the ward was the bailiwick of the resident, the lecture and conference were the setting for contributions of faculty members in providing formal and theoretical knowledge. The image of the faculty members held by students often implied loftiness, distance, and even unavailability. For third-year students, the main urgency appeared to be to learn about diseases and to organize their knowledge at first hand with the help of someone who was frequently or almost constantly available to answer questions and to help them solve problems.

Other students were seen by their classmates as helpful in transmitting information about procedures, in clarifying problems through group discussions, or in presenting interesting cases. As expected among any group of students, the more capable ones were sought out by those who were less

able. An obvious advantage, of course, in such use of classmates was avoidance of repercussions or unfavorable impressions which students thought might be stimulated by similar approaches to others.

Most students paid little favorable notice to nurses, at best giving them credit for possessing knowledge only of routines or mainly service aspects in patient care that had little value to a student at the present stage of his training. Among the small groups of third-year students who had extended personal contact with the nurse-educator, approximately one-third, in their final interviews, showed attitude changes in the direction of a more favorable image of the nurse's role in the training of medical students. However, the presence of a nurse-educator, helpful as it appeared to be for some of the students who had worked with her, was not often a basis for *generalizing* about nurses.

Corroboration of these interpretations of the interviews with students was provided by the questionnaire data. Both junior and senior students were asked to indicate which persons they felt had contributed most importantly to their training for nine separate items that had been developed from the earlier interview materials. Results for the junior group are shown in Table 1 and can be summarized as follows:

1. The faculty was most valued for the teaching of general medical principles, as contrasted with providing more "practical" information. Two conspicuous shifts occurred between the early and late evaluation of faculty by students—their value in providing techniques for examining children increased, while that for learning how to teach parents fell off.

2. Residents were credited with a broad spectrum of teaching functions, as seen by the fairly even distribution of percentages assigned in both the upper and lower sections of Table 1. This consistency is rather striking when contrasted with the irregular scatter of percentages of responses indicating the perceived teaching contributions of the faculty.

3. As indicated earlier, interns carried less weight than residents in the estimates of third-year students; a notable exception was that

TABLE 1
JUNIOR STUDENTS' ESTIMATES OF PERSONS WHO
CONTRIBUTE TO THEIR EDUCATION

SUBJECT MATTER TAUGHT	TOTAL	Faculty	TEACHING PERSONS (PER CENT)				Students
	RESPONSES*		Residents	Interns	Nurses		
Beginning Pediatrics:							
How to approach and handle patients	69	40.7	33.3	13.0	5.8	7.2	
Discussing diagnostic problems	79	35.4	36.8	13.9		13.9	
Teaching disease processes	61	60.7	26.2	11.5		1.6	
Help perform diagnostic procedures	78	6.4	35.9	32.1	5.1	20.5	
Learn techniques for examining children	76	30.3	36.8	22.4	3.9	6.6	
Answer questions about procedures	84	15.5	40.4	27.4	1.2	15.5	
Orient to ward	81	8.6	29.6	29.6	14.9	17.3	
Teach medical principles	65	56.9	35.4	6.2		1.5	
Learn techniques to teach parents	63	34.9	36.5	15.9	7.9	4.8	
End of Pediatrics:							
How to approach and handle patients	84	41.7	28.6	10.7	8.3	10.7	
Discussing diagnostic problems	92	32.6	32.6	14.2		20.6	
Teaching disease processes	65	61.5	27.7	6.2		4.6	
Help perform diagnostic procedures	89	4.5	33.7	34.8	9.0	18.0	
Learn techniques for examining children	82	41.5	35.4	14.6	1.2	7.3	
Answer questions about procedures	98	15.3	37.8	26.5	4.1	16.3	
Orient to ward	96	10.4	29.2	23.9	20.9	15.6	
Teach medical principles	73	53.4	27.4	9.6	5.5	4.1	
Learn techniques to teach parents	81	25.9	30.9	18.5	18.5	6.2	

* Percentages are based on totals for each item. The higher this frequency, the more students have allocated the function to more teaching persons.

TABLE 2
SENIOR STUDENTS' ESTIMATES OF PERSONS WHO
CONTRIBUTE TO THEIR EDUCATION

SUBJECT MATTER TAUGHT	TOTAL	Faculty	TEACHING PERSONS (PER CENT)				Students
	RESPONSES*		Residents	Interns	Nurses		
Beginning Pediatrics:							
How to approach and handle patients	68	51.5	29.3	5.9	7.4	5.9	
Discussing diagnostic problems	79	45.5	34.2	3.8		16.5	
Teaching disease processes	62	59.7	33.9	4.8		1.6	
Help perform diagnostic procedures	76	6.6	39.5	36.8	3.9	13.2	
Learn techniques for examining children	76	43.5	38.1	11.8		6.6	
Answer questions about procedures	80	20.0	46.2	20.0	1.3	12.5	
Orient to ward	85	8.2	34.2	25.9	17.6	14.1	
Teach medical principles	63	61.9	31.7	4.8		1.6	
Learn techniques to teach parents	68	32.3	36.8	11.8	14.7	4.4	
End of Pediatrics:							
How to approach and handle patients	75	50.7	33.3	4.0	2.7	9.3	
Discussing diagnostic problems	92	41.3	33.7	10.9		14.1	
Teaching disease processes	63	61.8	30.2	3.2		4.8	
Help perform diagnostic procedures	91	4.4	35.2	34.0	7.7	18.7	
Learn techniques for examining children	87	44.9	35.6	8.0	4.6	6.9	
Answer questions about procedures	96	18.8	38.6	28.1	1.0	13.5	
Orient to ward	89	7.9	33.7	31.4	14.6	12.4	
Teach medical principles	74	54.0	36.5	5.4		4.1	
Learn techniques to teach parents	80	37.4	33.7	8.8	13.8	6.3	

* Percentages are based on totals for each item. The higher this frequency, the more students have allocated the function to more teaching persons.

item concerned with "helping to perform diagnostic procedures" which was considered a valuable contribution of the intern by about one-third of the junior students.

4. Even in the single item ranked highest for nurses—"orienting to the ward"—junior students were reluctant to give much credit, apparently preferring to get this information from the house staff or other students. However, an encouraging increase in the recognition of the nurse's contribution to three items—"orient to ward," "parent teaching," and "helping to perform diagnostic procedures" is evident in the final questionnaire responses.

5. Classmates were used to fill in the gaps in those aspects of education which could be handled informally. Even in these instances, however, juniors apparently preferred the help of the house staff.

The following brief conclusions regarding evaluations made by seniors are based on the information contained in Table 2.

1. Seniors gave a similar but slightly higher evaluation than did juniors to the faculty for the teaching of general medical principles and disease processes.

2. Again, seniors consistently assigned similar ratings to the resident physicians for all functions, indicating that the residents are seen as very important contributors to almost all facets of education entering into this present study.

3. Seniors apparently turned to interns mainly for help with diagnostic procedures and ward routines.

4. The role of the nurse seemed at least as minimal for seniors as it had for juniors. Even with regard to ward orientation, it seemed clear that the student preferred the house staff to the nurse.

5. Classmates apparently served a function for seniors similar to that of interns. They were used for help with concrete questions and problems having to do with specific routines or procedures.

Images of the patient.—A telling insight into attitudes of medical students can be obtained by analyzing their views about patients. Care of the sick patient is, after all, the final purpose of their training as students and still the principal social justification of the medical profession. The training of the medical student and his socializa-

tion into the professional role of physician are persistently, although not always deliberately, oriented toward developing and forming appropriate attitudes—along with the special skills he is taught.

However, the socially prescribed attitudes toward patients still permit some deviation—deviation that enhances these attitudes for research purposes, because the individual is not "forced" to give a single response as the only approved attitude he may express. The physician or medical student perhaps should hold favorable attitudes toward all patients, but within these bounds he can prefer one type of patient over another without violating a social or professional code of conduct. "Preference" does not mean the out-of-hand rejection of any patient. Rather, a preference for particular patient-types can be condoned because it may imply that the individual can work better with one type of person or problem rather than another. The attitudes centering on the patient, then, permit individual variations among groups of students at the same time that they provide insight into this aspect of their professional role.

Pediatric patients present a special example of the points just made. The fact of age creates its own special advantages and disadvantages, which medical students are quick to discern, particularly after their experiences with adult patients on other services. Children and infants often demand a doctor-patient relationship that differs markedly from the usual adult relationship. The cooperation of children who are old enough to talk sometimes must be won by the psychological techniques of a parent rather than by the role prerogatives of a physician. Infants must be approached and managed in yet other ways. One of the rewards for these demands of special handling is that sick children tend to recover or respond more dramatically and more quickly than do sick adults.

Added to this is the fact that the hospital is a most unnatural situation for the child and one that he cannot usually understand easily. Even the presence of the parent and

a favorite toy are seldom enough to overcome the fears of strange hospital routines and medical personnel. The hospital routine also at times demands extraordinary behavior from the child. Thus, for example, strict requirements of immobility for some treatment-procedures are beyond the emotional and physical endurance of many children, and necessary restraints may well magnify or emphasize the grotesqueness of the situation. Added to this is the discomfort or real pain, not only of sickness, but also

pediatric medicine and to get the sick child diagnosed, treated, and cured. The student then, is not always attentive to the total needs of the child and fails to adjust his orientation and approach to fit all the special circumstances presented by sick children.

The fact, too, that most medical students have had no personal and extended experience with children makes the adjustment that much harder. Less than a third of the students we interviewed were parents. Here is an area in which the nurse-educator could

TABLE 3
STUDENTS' ATTITUDES TOWARD PEDIATRIC PATIENTS

ATTITUDES TOWARD PEDIATRIC PATIENTS	JUNIOR STUDENTS (N=40)		SENIOR STUDENTS (N=40)	
	Beginning Pediatrics (per cent)	End Pediatrics (per cent)	Beginning Pediatrics (per cent)	End Pediatrics (per cent)
Most attractive features of patients:				
Enjoyable to work with	47.5	45.0	50.0	60.0
Make dramatic recoveries	27.5	45.0	37.5	30.0
Other reasons	17.5	10.0	12.5	7.5
No answer given	7.5			2.5
Most difficult features of patients:				
Cannot tell what's wrong with them	27.5	35.0	30.0	32.5
Difficult to examine	30.0	25.0	22.5	15.0
Parents must be treated along with their children	10.0	7.5	27.5	22.5
Don't understand you're trying to help them	22.5	27.5	12.5	20.0
Other reasons	5.0	5.0	7.5	5.0
No answer given	5.0			5.0
Type of child preferred as patient:				
Bold and active	12.5	22.5	17.5	7.5
Quiet and cooperative	52.5	55.0	42.5	45.0
Aggressive and alert	30.0	20.0	35.0	40.0
Other types	2.5	2.5		2.5
No answer given	2.5		5.0	5.0

of needles, examinations, and treatments that must seem to the child to be gratuitously inflicted.

For medical and nursing personnel, there are many children to be dealt with at any given time. From the standpoint of the medical student the child's need for attention sometimes becomes the weakest link in his own personal hierarchy of demands. He has much to do, and he has to do it under a burden of anxiety in the learning situation. Learning special techniques to handle children may strike him as relatively superfluous under such stressful conditions. The central tasks, as he sees them, are to learn about

help medical students. It is an area to which she could help orient them, enhance their training, and ease some of the pressures of their inexperience.

Specifically, the questions asked of junior and senior students concerned the most desired features of pediatric patients, the difficulties encountered in working with them, and some specification of the characteristics of the children most preferred by students as their patients (Table 3).

The replies of juniors and seniors to the question concerning what they believed to be the attractive features of pediatric patients emphasized images that we found in

our earlier interviews. Pediatric patients were "enjoyable to work with" according to most medical students, followed closely by the view that they "make dramatic recoveries." This latter feature impressed the juniors much more after the Pediatrics assignment than it did when they first started. Seniors were struck with the enjoyability of working with pediatric patients more at the end of their assignment than they were at the beginning.

Regarding the opposite view, as to the difficulties with pediatric patients, students were able to foresee some of the problems, although there was some shift in emphasis during the period. Juniors at the start believed that children would be difficult to examine and difficult to diagnose because they could not communicate as readily and understandably as adults. Coupled with the latter reason was the one that children did not understand the help being given them. These same three reasons remained important for juniors at the end of their pediatric work as well, with some shift in emphasis. Difficulties with examination and diagnosis were barriers that seniors also saw—though less frequently—in working with children. However, having to treat parents as well as children was more of an obstacle for seniors than it was for juniors, possibly because the latter had less contact with parents.

Another glimpse into the stresses of students, and their resultant attitudes, was conveyed by their responses to the question asking for the type of child they most preferred as patients. Our analysis of the earlier interviews showed that students tended to emphasize those features that would make the child easier to treat and manage. The alternatives presented to the students were choices between what was "convenient" for them as compared with what was "normal" for children.

Over half of the juniors preferred the "quiet and cooperative" child to all others. From the standpoint of the junior, preference was for a manageable patient; it was a choice yielding the greatest "convenience"

to the student. We have interpreted this to mean that the patient is the weakest link in the chain of demands upon the junior, and the majority apparently were prepared to select the type of patient that would make the fewest demands upon them. The other half of the junior group selected two types of pediatric patients that might be thought of as closer to norms for children: "bold and active" or "aggressive and alert."

Seniors, perhaps because of their added year of experience were a little less attracted to the "quiet and cooperative" than were the juniors, but still this type of child was preferred more than any other. "Aggressive and alert" children were preferred with almost the same frequency by seniors, this proportion increasing slightly between the beginning and the end of their pediatric assignments. The "bold and active" type of child was selected by fewer seniors at the end of the Pediatrics assignment than at the beginning, although in view of their preference for the aggressive child, it is difficult to interpret this decrease.

These findings emphasize the point that has been made earlier to the effect that the medical student is undergoing a twofold process: (a) being socialized into the values of the professional role and (b) learning the necessary skills and knowledge for that role. In the present instance this double function appears as a duality for the student in his relationship with the patient. The professional role requires acceptance of the attitude that the sick patient is the primary focus of that role; the learning of skills and knowledge requires that the student place this function first—if he is to acquire that information. Our data have been interpreted to mean, therefore, that the medical student places the patient relatively low in the hierarchy of demands upon him and emphasizes instead the best possible environment in which to learn about medicine. Needless to say, perhaps, we would conjecture that this attitude often extends beyond the field of pediatrics to include medical training in all clinical specialties.

There is a point to be made here that is of consequence beyond the immediate scope of our research. The tendency of many students to make the patient the most expendable item in the hierarchy of demands put upon them is an undesirable and quite certainly unintended feature produced by

the very weight of the educational process. The nurse-educator can provide one means whereby this undesirable feature may be alleviated. Such attitude changes, if effected, might be expected to persist after training as well as to be manifested in the current training situation.

MEDICAL EDUCATION FORUM

Editorial

One cannot help but be impressed by the expression of concern about the standards of and attitudes toward medical teaching that have been made in a series of articles and editorials which have appeared recently. Dr. Willard Rappleye's "New Challenges to Medical Education," which appeared in this editorial column in May, 1960, presents a forthright statement of the objectives for which all medical educators should strive. Medical educators include all those in our faculties who participate in the programs of our medical centers. Possibly we should reprint the A.A.M.C.'s "The Objectives of Undergraduate Medical Education." Some of our colleagues have lost their sense of balance in their eagerness to promote medical research and to separate it from medical education and patient care. Some of them have become builders of private empires, with a loss of perspective regarding the over-all programs in their institutions.

Recently, Doctor Aura Severinghaus of the College of Physicians and Surgeons at Columbia, Doctor Joe R. Brown of the Mayo Clinic, and I prepared a statement on academic responsibility that is pertinent to some of our present day's concerns. It was prepared for the Neurology Postgraduate Training Committee of the N.I.H.; we are indebted to Doctor Severinghaus for the preparation of the final draft, and I quote from it:

"We consider it to be the chief objective and responsibility of those individuals who hold academic appointments in our medical schools or who serve other medical institutions in a comparable manner to (1) add to our present store of scientific knowledge, (2) integrate new discoveries with the existing body of knowledge, (3) pass on this knowledge to students who, hopefully, will become the academicians of tomorrow, and (4) suggest the early application of medical knowledge wherever it has a bearing upon the care of the sick.

"We believe that this simple statement is timely because there is not infrequently a tendency to ignore the fact that all of these components of academic responsibility are essential; are for the most part inseparable, and must be kept in balance.

"To reiterate, we believe that medical progress will be secure and hastened to the extent that we succeed in linking to the discovery of new knowledge through research, its dissemination through teaching, and with the least possible delay its application to the betterment of patient care."

Many of us are firmly convinced that a member of the faculty of a medical school should be a *good teacher*, an *able investigator*, and, if he is in the field of patient care, a *good doctor*. This is so obvious that a statement like this may seem unnecessary. However, discussions with those responsible for over-all programs lead to the conclusion that it is most timely.

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Datagrams*

GEOGRAPHIC RESTRICTION AND MEDICAL SCHOOL EXPENDITURES

Two significant correlates of the learning ability and the level of achievement in undergraduate science areas of a medical school's student body are (1) the total annual expenditure of the medical school and (2) the proportion of out-of-state students enrolled in the first-year class.

Seventy-four United States medical schools were classified into the following six categories on the basis of their total expenditures during 1957-58 and the proportion of nonresident students they admitted to their first-year classes during 1956-57 and 1957-58:

Low—restricted (7 schools, 555 students)	Expenditures under \$2 million, less than 10% nonresident students
Low—unrestricted (12 schools, 951 students)	Expenditures under \$2 million, 10% or more nonresident students
Middle—restricted (12 schools, 1,192 students)	Expenditures between \$2 million and \$3.5 million, less than 10% nonresident students
Middle—unrestricted (18 schools, 1,796 students)	Expenditures between \$2 million and \$3.5 million, 10% or more nonresident students
High—restricted (8 schools, 993 students)	Expenditures over \$3.5 million, less than 10% nonresident students
High—unrestricted (17 schools, 1,610 students)	Expenditures over \$3.5 million, 10% or more nonresident students

The following schools were not included in the analyses: Dartmouth, Einstein, Florida, Howard, College of Medical Evangelists, Meharry, North Dakota, Seton Hall, South Dakota, West Virginia, and Woman's Medical.

Average Medical College Admission Test (MCAT) scores were computed for the 1957-58 first-year class at each of the 74 schools. Figure 1 shows the median and range of these

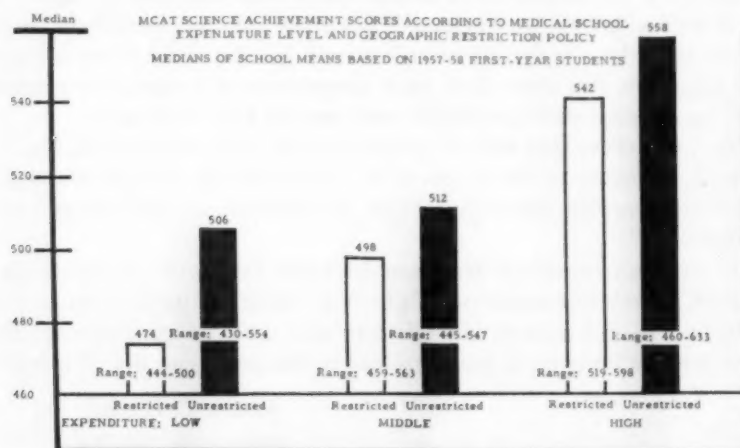


FIG. 1

* Submitted by the Basic Research Division of the AAMC. Source of information will be furnished on request.

averages on a combined Verbal and Quantitative Ability score for schools in each of the six expenditure-restriction categories. Figure 2 contains similar information for the Science Achievement of the MCAT.

Note that, although high expenditure levels and unrestricted enrollment policies are associated with the highest median scores and a considerably higher upper limit than is obtained under any other set of conditions, this combination does not guarantee high-level ability in the student body. The lowest school mean in the high-unrestricted group is considerably lower than its counterpart in the high-restricted group.

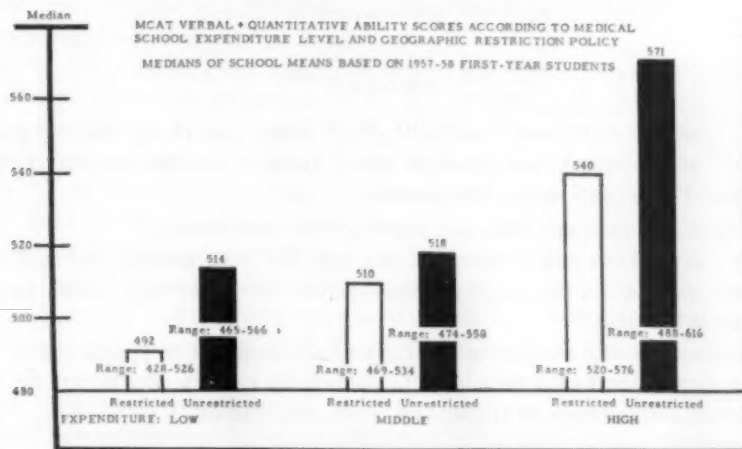


FIG. 2

Also, neither low expenditures nor geographical restrictions alone prohibits the attraction of intellectually able students, as shown by the high mean scores obtained by some schools in each of these categories. (See the upper ends of the ranges in the low-unrestricted and high-restricted groups.)

Low expenditures plus geographic restrictions, however, seem virtually to guarantee that the average intellectual capacity of the student body will be poor to mediocre. Only two of the low-restricted schools had average scores that were at or above the mean obtained by the *entire* 1957-58 applicant group, and only one of these schools scored above the mean of all *accepted* applicants for that year.

Communications

"BY THE RIVER OF BABYLON"*

ALVAN G. FORAKER, M.D.†

I. PROLOGUE

On a sultry autumn afternoon Tom Smith, Dick Jones, and Harry Brown,¹ practicing omphalologists² of Gladesdale³ fished on the shady bank of the Babylon River. The fish were not biting. The physicians became pensive.

Smith: "Peace and quiet are O.K., but this is getting monotonous."

Jones: "We have about talked ourselves out, too. We have warmed the ears of every doctor in town and roasted the hospital administrator. We know each other's interesting cases by heart. What next?"

Brown: "Let's delve into the past a bit. Each of us came here to practice after being a junior faculty man in some medical school. Let's each tell exactly why he left the medical school to practice omphalogy in Gladesdale. Tom, you lead off."

II. TOM SMITH'S STORY

Smith: "I'm not going to bare my breast and reveal all. There are some personal and financial factors to leave out. However, I'll give you the big picture. I did general medical duty in the Army during World War II and took all my residency in the postwar period. Then after a lot of shopping around I accepted an instructorship at East Atlantic U. This looked like a pretty good place for a nice combination of continued clinical experience, teaching, and research. They had just gotten over some sort of academic war."

Jones: "What was it about?"

Smith: "Various things. Partly it seemed to be a struggle for power between the veterans of the war, who had been away for several years, and the men who stayed home and kept the medical school going. It was fairly bitter, with some residual hard feeling."

Brown: "Who won?"

Smith: "The veterans didn't. Actually, there was no clear-cut victory. A few compromises were reached, a few men left the school, and everyone settled down in reasonable peace and quiet. Things were pretty good for a few years. I didn't get much money, and I worked like a dog. However, I was getting some good clinical experience. Really, it was sort of a super-

* "By the rivers of Babylon, there we sat down, yea, we wept, when we remembered Zion."—The Bible, Psalm 137:1.

† 800 Miami Road, Jacksonville 7, Florida

¹ A. G. Foraker, Cheops vs. Mark Hopkins (With Apologies to Wm. B. Bean). *J.A.M.A.*, 173 (10):219-14, 1960.

² W. B. Bean, Omphaloscopy and Worse Verse. (Privately printed.) Iowa City, Iowa, 1954.

³ A. G. Foraker, Latinian Exchange (The Education of Juan and José). *J.A.M.A.*, 172:168-72, 1960.

residency. I enjoyed the undergraduate and resident teaching. Best of all, I got started on some research. Ralph Active, head of omphalology, helped me to get going on some of the early work on corticoids in the treatment of omphalitis. We had some animal experiments running parallel to our clinical work. I really thought I was started on a hot lead. I turned out a few papers, read some at meetings, and got a couple of grants. This research really got me excited about the academic career. It seemed my foot was on the ladder of professorial success."

Brown: "Sounds great. How come you are not the professor at some big school now?"

Smith: "I'm a refugee from the academic wars. The fight started all over again."

Brown: "What was it about this time?"

Smith: "I never did find out exactly. I was so low on the totem pole that I couldn't get a good idea of what the professors and the deans were scrapping over. Some of it had to do with the use of the county hospital by the medical school."

Jones: "That's a common lesion in medical school disorders."⁴

Smith: There seemed to be several different battles going on at once. People might be allied in one skirmish and enemies in another. I felt like a character out of Kafka,⁵ on trial for an unknown crime before a faceless judge."

Jones: "Couldn't you keep out of it?"

Smith: "I certainly tried. I scrooched my neck down between my shoulder blades and let the big guns blast over my head. Finally I got squashed, like a typical innocent bystander."

Brown: "What was the problem?"

Smith: "Research money. Active, the chairman of my department, was one of the leaders of the 'Hatfields,' you might say. Insofar as I could understand what was going on, I thought he was probably right, but I kept out of active guerrilla warfare. However, the principal 'McCoy' had a strangle-hold on all research money coming into the school in my field. I couldn't get a cent for my work without his approval. He was a real big 'grant eater,'⁶ and didn't want research going on which would not be to his political benefit, one way or another. I had to have his good will. This placed me in an impossible situation between the 'Hatfields' and 'McCoys.' There was no way for me to go except—out."

Jones: "What happened after you left?"

Smith: "A lot of men left various departments before my own departure, and the exodus continued. I was in Gladesdale before this war reached its peak when several department chairmen were given the boot."

Brown: "Who won, the forces of evil or the forces of good?"

Smith: "It's not easy to tell. These things are complicated. You can't divide the usual medical school struggle into the good guys and the bad guys, like a TV western. Some of the good guys have bad features, and vice versa. Several good men were ousted or left. Some mediocre ones were squeezed out also. I leave it to you to classify me. Some new men were appointed who seemed O.K., but some other ones were also appointed. Now things have settled down to another uneasy peace with a slight tinge of cold war. My experience made me give some study to the general problem of medical school conflict. I think many schools

⁴ *Time*, 75:5:48, Feb. 1, 1960.

⁵ F. Kafka, *The Trial*. New York: Alfred A. Knopf, Inc., 1937.

⁶ G. de Takats, Parkinson's Law in Medicine. *New England J. Med.*, 262:126-28, 1960.

go through cycles of 'war and peace.' For some years they go along fine, then troubles break out—apparently spontaneously. It's like the lemmings of Norway⁷ who feel the urge to commit mass suicide in the ocean at intervals."

III. DICK JONES' STORY

Jones: "Truly, Tom, that was a heart-rending tale. My umbilicus palpitates for you. It's my turn now. During my residency at Elysia University⁸ I became much interested in congenital anomalies. We irradiated the pituitary early in pregnancy, trying to produce an increased incidence of umbilical anomalies in the offspring. We got some encouraging results. I don't suppose any of you remember this, but I won the American Omphalological Association's Foundation Prize for residents in 1952 with my paper on this work."

Smith: "I do remember that—the A. O. A. Prize. That's a real plum!"

Jones: "Well, naturally enough, I thought I was a pretty hot research man with that background. I wanted a job with a lot of research opportunity. I had several good offers at the end of my residency, but the best one looked to be at Metrocolossal in the Cheyne-Ganke Institute."⁹

Brown: "That sounds great. They do a lot of research. Were you on a pure research basis?"

Jones: "No, I spent part-time doing clinical omphalology, mostly on service patients. This suited me very well, since I wanted to keep up the clinical side."

Smith: "How did the research go?"

Jones: "It was very strange. I thought they wanted me as a bright productive young guy who could turn out some good research and add some small bit to the scientific stature of Cheyne-Ganke. That was the way things seemed when I signed on. However, after I got there many rocks appeared in the path of my doing original research. There was increasing pressure for me to drop my own work and to do assigned projects as a group member."

Brown: "What's wrong with group research?"

Jones: "Nothing, except that it rarely produces new ideas. However, some things have to be done by groups, and it's O.K. for the guy who likes it. But I just wanted to work on my own ideas. I felt that I was earning my way basically at Cheyne-Ganke by doing clinical omphalology 40 hours a week for a small salary. When research time came at night and weekend, I wanted to do original studies."

Smith: "What happened? Did you get to do your own work?"

Jones: "I'm a pretty butt-headed fellow. After a lot of pushing I did get some facilities and technical assistance, using grants I applied for myself. I turned out a little work during my first year. However, there was a definite chill in the air. There was constant pressure, deprecation of my research, promises of great things awaiting the group researcher. They told me that if I would give up my own narrow ideas, and cooperate on some of their big projects, they would push my career and 'build me up for one of the big professorships.' Sometimes I felt that I was with Satan on the mountaintop¹⁰ being shown the kingdoms of the earth."

⁷ *Encyclopaedia Britannica*, 13:403-4, 1959.

⁸ A. G. Foraker, Project Pookashonoma. *J.A.M.A.*, 172:212-14, 1960.

⁹ A. G. Foraker, Icarus, Kiwi and John. *New England J. Med.*, 262:81-83, 1960.

¹⁰ The Bible: St. Matthew:4:5-10.

Brown: "Why didn't you accept one of the kingdoms?"

Jones: "Two reasons. First, I wanted to do my own research or none. I have nothing against group research for other people. But research should be an intellectual pleasure. It was for me, just as long as I could work on my own ideas. If not, I wanted no part of 'organized' research."

Brown: "What was the second reason?"

Jones: "I doubted their ability to produce much with group research or to advance my career. They had a big turnover. I think they might have kept more good men had they allowed anyone who so desired part time for individual study."

Smith: "But still you were doing some original work at Cheyne-Ganke."

Jones: "In my third year there, they started 'Project Pookashonoma.'⁸ I was assigned to study the effects of amino-mercaptan-enzymes⁹ on umbilical development in the Latinoni-an axolotl. This was part of a big study on pookashonoma. I just couldn't see it, so I left."

Brown: "What ever happened to 'Project Pookashonoma?'"

Jones: "Not much. It's a big mountain in labor, with production of a few tiny mice. They are still beating the drum for it, though. As a physician, it was relatively easy for me to leave and go into practice.¹¹ Some of the Ph.D.'s had more trouble. They don't have the same escape mechanism we do. The outstanding man on the project, Backrow⁹, drifted off to some little college to teach biology. Some of the other biologists, chemists, etc., are still there, with their necks bowed to the lash. Poor guys, they need the job."

Brown: "I see you are doing some research over at Sylvan Community."

Jones: "Yes, I have a little work going, even out here in the non-university 'boondocks.'¹² Minnow, the pathologist,³ has let me have some lab space, and I have a little grant. I certainly miss the facilities of Cheyne-Ganke, but it's nice to be able to do what I want, even on a limited scale."¹³

IV. HARRY BROWN'S STORY

Brown: "I have no dramatic yarn. My problem was an accumulation of little things, not one big one. At the end of my residency, I stayed on as an instructor in Vapid City,^{8, 9} Things went pretty well. I'm not a research man, but I did like to teach. I wrote up a few technical suggestions in surgery, and a literature review on omphaloma. We had 39 cases in our own series to add. The first few years were happy, by and large."

Smith: "So what happened?"

Brown: "Nothing. That was the trouble. It seemed I was in a rut, and would never get past the assistant professor level. There was no room for further growth in the department. John Aloof, chief at Vapid City, didn't seem to be able to place his men in chairs elsewhere in the country. You know, that is the best sign of the successful professor at his peak—how many of his disciples he can pop into other chairmanships. The job that seemed fine to me as a 29-year-old chief resident became a little tarnished to a 39-year-old assistant professor."

Smith: "That's right. As you get older, it's more difficult to continue to be the 'second man in Rome.'¹⁴

¹¹ A. G. Foraker, The Chairless, One-armed Pathologist. *Am. J. Clin. Path.*, 31:345-47, 1959.

¹² A. G. Foraker, and S. W. Denham, Research in the "Boondocks." *Obst. & Gynec.*, 12:347-49, 1958.

¹³ A. G. Foraker, Medical Research in a Community Hospital. *Am. J. Clin. Path.*, 31:248-59, 1959.

¹⁴ *Plutarch's Lives* (attributed to Julius Caesar). *Barrett's Familiar Quotations*, 12th ed., p. 114. Boston: Little, Brown & Co., 1950.

Brown: "Yes. I'm not exactly a king in this 'Alpine market place' but at least one can feel a whole man in private practice, responsible to one's self. In a university department, there can be only one 'king of the mountain' in one field—the department chairman. I got tired of the perpetual struggle to climb to the top of the heap."

Smith: "I know what you mean. There is some semblance of a 'social pecking order'¹⁵ among the private practicing omphalologists of Gladesdale, but it's not as rigid as in the average university department. Was there much general academic fighting going on in Vapid City?"

Brown: "About average. They had the usual 'town-and-gown' conflict as to how much the full-time men should practice and how the fees should be split. The University wanted to put the fees into a pool, from which all medical school faculty members, even Ph.D.s, could benefit."

Jones: "How do you feel about that?"

Brown: "A little dichotomous. Then I thought the underpaid medical school physicians ought to be able to augment their incomes by practice. Now that I have crossed the fence, I can understand better how the practicing physicians of Vapid City feared the encroachment of the University into their private work."

V. EPILOGUE

Smith: "We seem to have run the full gamut of medical school uproar. What do you suppose causes it?"

Jones: "My father was a professor of economics, and I was brought up in a good understanding of general university warfare, which can be pretty vicious. Then, as you know, sometimes nonacademic medicine is associated with a certain amount of political maneuvering."

Brown: "Amen!"

Jones: "My theory is that in medical schools there is cross breeding of university and medical politics, producing a particularly virulent strain. Actually, medical schools are just another form of human endeavor, subject to human frailties, including politics. People of varied capabilities are engaged in a tremendous undertaking, usually with not enough money. Each has professional and personal goals. Conflict is inevitable."

Smith: "Medicos are a hard-headed, individualistic tribe. Medical school teachers are no different. Also they have an escape mechanism to private practice.¹¹ This makes them more refractory to academic discipline than the college instructors."

Brown: "Let's get away from these abstractions and down to some concrete examples. Do you fellows regret the time you put in medical school work?"

Jones: "No, it was a valuable part of my education. As Tom said, it was sort of a super-residency. I feel that I am a better omphalologist because of my years at Metrocolossal, research politics notwithstanding."

Smith: "I agree. Even though I do no research now, my investigations are among my most pleasant recollections. They furnish a background, so I can understand the new work going on now in the field."

Brown: "I rather miss the school myself, especially undergraduate teaching, the seminars,

¹⁵ T. Schjelderup-Ebbe, *The Social Life of Birds*. In: Carl Murchison (ed.), *Handbook of Social Psychology*, pp. 947-73. Worcester, Mass.: Clark University Press, 1935.

the good library facilities. Our work here with the residents at Sylvan Community² does help to compensate, though."

Jones: "Don't let nostalgia overcome you, Harry. We are all better off for our medical school experience—true. However, we here are all better off for having left for private practice when we did. There is no sight more pitiful than some poor jerk hanging around the school as a perpetual peon, a permanent assistant professor¹¹ without adequate income, research accomplishment, or academic prestige."

Smith: "In my opinion our experiences represent fairly physiological phenomena. We agree that we have all benefited to some degree by our medical school experience. I think that the schools, in turn, benefited by having us as eager young guys, willing to render service, research, and teaching in subsidiary status for small salaries. They are also better off that we have now left, since we did not seem destined for academic success. They need a continuous supply of bright young 'second lieutenants' who will either mature into academic colonels, or pass out into practice, leaving vacancies for the next generation of ex-chief residents."

Brown: "That's enough philosophy for me, and none of us has caught a fish. Babylon River has not been very good to us today. Let's go home."

Report

TEACHING DENTISTRY TO MEDICAL STUDENTS

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Although there are many dentists who serve as members of American medical school faculties, the organized teaching of the subject of dentistry to medical students is practically unknown. In Japan the situation is different. It is more the rule than the exception for a course in dentistry (usually with the clinical emphasis on oral surgery) to be included in the curriculum of Japanese medical schools.

The course in dentistry in the curriculum of the Japanese schools is compulsory, but the subject of dentistry is not included in the medical national board examinations.

OKAYAMA UNIVERSITY MEDICAL SCHOOL

Okayama University Medical School was founded as an independent teaching institution in 1870 by the local prefectural government and was eventually included in the vast network of schools administered by the national government. In 1949 Okayama University was founded, and the medical school became one of the schools of the university.

In recent years there has been a decided trend toward "Americanization" of the medical curriculum of the school. Along with this trend have come modern methods of scientific and clinical teaching. Today the curriculum bears a strong resemblance to that of most American medical schools. Dentistry is included as an integral part of that curriculum.

THE RELATIONSHIP OF DENTISTRY TO OTHER COURSES IN THE CURRICULUM

On the basis of teaching hours in the curriculum, ophthalmology, otolaryngology, radiology, dentistry, neuropsychiatry, and orthopedics are closely related. During the 1960-1961 academic year, 3 weeks of clinical teaching are allocated to each of these courses in the junior class. In the sophomore class, 30 hours of lecture time are devoted to neuropsychiatry and orthopedics, 24 hours to otolaryngology, and 20 to ophthalmology, radiology, and dentistry.

THE PHILOSOPHY OF TEACHING DENTISTRY TO MEDICAL STUDENTS

Medicine and dentistry are health service professions. No one has ever been able to establish a clear dividing line between them. There is no dividing line. Many phases of dental practice overlap into special areas of medical practice. Therefore, the physician and the dentist must frequently work together to provide good patient care.

Dentistry is taught to the students of Okayama University Medical School to give them

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a clear understanding of the role of the oral cavity and adjacent structures in the practice of medicine. There is a clinical emphasis on oral surgery, since this is the area of dental practice in which most of the overlapping occurs between medicine and dentistry; but the over-all objective is to give the students an appreciation for dental and oral disease and a basis for understanding the relationship of the oral cavity to systemic disease.

Since there is a large dental service associated with the hospital and outpatient clinic, the medical students have an opportunity to observe dental patient care and to work with the graduate dentists and postgraduate dental students, which establishes the groundwork for a smooth relationship between the two professions in practice.

THE COURSE IN DENTISTRY

The third trimester of the sophomore year is devoted to orientation in the clinical practice of medicine. This period of orientation is designed to help bridge the gap between the basic sciences and the clinical courses. Each clinical department, therefore, in its orientation lectures, makes a conscious effort to assist the student in applying the basic sciences to the treatment of patients. During the orientation course, 20 hours are devoted to orientation in dentistry.

In the junior year the class of 80 students is divided into ten sectional units of eight students each. The individual units are assigned to specific clinical departments. Each section spends 3 weeks in the dental clinic, examination room, and seminar room. Also, during the same 3-week period, the entire junior class is assigned to various lectures in non-clinical fields, such as legal medicine and public health, and to "combined lectures." Combined lectures are designed to demonstrate the overlapping nature of different medical disciplines. For example, a lecture is given on the subject of "facial injuries," in which the orthopedics and dental departments collaborate.

Orientation.—The 20-hour orientation course for the sophomore class is divided into eighteen hourly sessions, covering a wide variety of dental and dental-related subjects, and a 2-hour final examination.

Reading assignments are given in Japanese, American, and German textbooks throughout the lectures, with frequent reference to specific articles in the scientific literature.

Clinical observation.—The clinical observation period depends in large part on the clinical material available for teaching purposes at the time. An effort is made to demonstrate to the students as wide a variety of oral diseases as possible, accompanied by discussion periods. Also included in this 3-week period is a series of round-table seminars, in which a variety of audiovisual aids are utilized to acquaint the student with ramifications of the subject matter under discussion. One afternoon period a week is used to demonstrate an oral surgical operation. On Saturday morning of the final week, each student is given a final oral examination.

Three mornings each week ward rounds are conducted in the hospital from 8:30 to 10:00, at which time all in-patients are examined. Discussions take place about each case at appropriate times. There are fifteen beds assigned to the dental service in the hospital, which are always in use.

Polyclinical sessions take place every morning from 10:00 to 12:00, at which time all new and recalled patients are examined. The medical students have an opportunity, in these sessions, to take case histories of patients, and to present their impressions to the teaching staff and other students. They have the opportunity to observe patients with

relatively uncomplicated dental diseases, such as dental caries, and many others with extensive and destructive lesions of the oral cavity.

Two mornings and four afternoons each week, round-table seminars are conducted by members of the faculty. Prepared talks are given to the students, who are encouraged to participate. At these sessions many of the clinical cases are discussed in detail.

MAKE-UP OF THE DENTAL TEACHING STAFF

The 1960-1961 teaching staff is made up of a professor, an assistant professor, an exchange professor (presently serving on a Fulbright teaching grant), two lecturers, and three assistants. There are three full-time and fifteen part-time dentists who work in the clinic, five postgraduate dental students (working for Doctor of Medical Science degrees), nine registered nurses, two dental hygienists, and three technicians. The dental department is the smallest in the school.

CLINICAL FACILITIES

There is an outpatient dental clinic consisting of a large room (with six dental chairs), a minor surgery operating room (with three chairs), a room for treating children (two chairs), an examination room (two chairs), and an x-ray room (one chair). In the hospital is a special dental operating room, with two operating tables and general anesthetic equipment, and an examination room for in-patients. Two afternoons each week, oral and maxillo-facial surgical procedures are performed, at which attendance by the medical students is optional.

Adjoining the offices of the professor and assistant professor of dentistry are a dental library, research laboratory, and seminar room. In a separate building, there is a dental animal operating room, used by the postgraduate students for their research experiments. Each postgraduate student must conduct an extensive and original research project during the 4 years he is connected with the school. The postgraduate dental students, who also take night calls, are in constant contact with the medical students.

OBSERVATIONS AND CONCLUSIONS

Dentistry is an integral part of the medical curriculum of Okayama University Medical School. Through participation in a 20-hour orientation course and 3 weeks of clinical observation, the medical student is taught to appreciate the role of the oral region as a part of the human body. He is also given an opportunity to study and work with members of the dental profession, providing the basis for a smooth-working relationship between the two professions after graduation.

Address

THE STUDENT'S DILEMMA*

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I have been asked to discuss with you some aspect of the relationship between the medical student and the educational process. Previous discussions by others before similar groups have been concerned with the desirable qualities of the prospective physician (2) and the methods currently used in this country for the selection of medical students (1). There is nothing that I could say on these topics that has not been said better by Dr. Severinghaus or Dr. Glaser.

I have chosen instead to discuss some of the factors in our educational system that influence the transformation of the individual into a physician, and more particularly the impact that these factors, many of them disturbing, have on the student. There is a considerable ferment today in medical education in this country, concerned with such matters as shortening the total educational span of the physician, a melding of the undergraduate and medical school curriculums, and a reorganization of the pedagogical techniques of medical education. However, the student is confronted with apparently conflicting objectives and dilemmas at various stages in his educational experience, as it is presently constituted. If he is the sort of student we think is most desirable for education as a physician, he must experience a considerable amount of confusion and frustration as he encounters these conflicts.

The first dilemma confronting the student is the question of the most desirable objective of the collegiate intellectual experience for the prospective medical student. The trend among medical educators for several years has been to suggest that prospective medical students have as broad an educational experience as possible. The phrase "well-rounded individual" is one frequently used as descriptive of a desirable quality in medical students. Almost in the same breath, however, medical educators will insist that traits of scholarship are necessary in the medical student and that he should be indoctrinated with these traits in college. Can both objectives be accomplished by the student as an undergraduate?

This apparent conflict has resulted in the presence of two types of curricula offered the prospective medical student by different colleges and universities in the United States. One of these types is the General Science Major, or so-called premedical course; the other is the "major field of study" type of undergraduate curriculum. The student must decide which course of study will best serve his needs as a professional student as well as an individual. An understanding of the student's dilemma will be facilitated by considering the objectives and effects of these two types of curricula.

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The objective of the General Science Major type of curriculum appears to be to give the student experience in courses in the natural sciences that are considered necessary for him to understand the basic medical sciences. These courses usually include 2-4 semesters of biology, 4 or 5 semesters of chemistry, and 2 semesters of physics. Often special, so-called premedical, courses are offered the student in these subjects in lieu of the usual courses in biology, chemistry, and physics required of other graduates of the school. The objective of such special courses is to offer the student those aspects of these disciplines which are thought to be most pertinent to his later needs as a medical student. Furthermore, the student is advised frequently to take such courses as histology, biochemistry, etc., presumably on the premise that he will be better prepared when he encounters these courses in medical school. However, one may question whether or not the best interests of the students are really served by this more or less vocational approach. To the preceding courses are added courses in several of the fields of the humanities, including English and a foreign language and courses in the social sciences and perhaps one course in mathematics. Certainly an advantage of the General Science Major, or premedical curriculum, is that it gives the student a broad intellectual experience, in that it exposes him to a variety of disciplines. In this respect, it appears to meet one of the objectives proposed by medical educators. However, a distinct disadvantage of this type of curriculum is that it does not provide an opportunity for the student to follow his interest in any one discipline much beyond the introductory level. It provides little opportunity for depth of study in any discipline and increases the difficulty of developing traits of scholarship. Thus another objective proposed by medical educators seems to be defeated. Of considerable importance is the fact that, if the student does not gain admission to medical school, he finds that his college experience is inadequate for other specialized careers. Perhaps a more serious question is "Does such a course of study, in fact, defeat the purposes of a college experience, in that it tends to encourage superficiality in intellectual matters? Does such a course of study generate a sense of frustration in the best students?"

The other type of curriculum, in which the student is required to select a major discipline of study following an introduction to several disciplines during the first 2 years of college, also presents conflicts with the stated objectives of medical educators for the undergraduate students. Such a course of study has the definite potential advantage of permitting the student to develop traits of scholarship. However, if the student chooses one of the natural sciences as his major, he still must meet the minimum requirements in the other fields of science and often in several of the fields of the humanities and social sciences, as required to varying degrees by medical schools. This makes more difficult a broad experience in the humanities and social sciences. If, on the other hand, the student chooses one of the fields in the humanities or social sciences for his major concentration, he still must meet the minimum requirements in natural sciences, as required by medical schools. Rarely will he have the opportunity to go beyond these minimum requirements. Another very important disadvantage of the latter choice of a course of study is that, since his science courses are usually widely interspersed with the other courses in the curriculum, the student may not be aware that his interest in the natural sciences is perhaps somewhat superficial until after he has begun the medical school curriculum, where the science load is heavy and intensive. With either type of major, it is often most difficult for the student to meet the major and minor requirements set by the undergraduate faculty and at the same time meet the more or less diverse requirements set by medical faculties for the undergraduate student.

Medical educators propose as highly desirable in the student such qualities as maturity

and leadership. Since there are no easily applied measures of the level of maturity, an impression obtained most frequently during an interview usually suffices. Participation in extracurricular activities is taken as evidence of leadership, without much concern for the students' motivation or the machinations of campus politics. The student is faced then with the dilemma of the true position of extracurricular activities in his development. Is this area one that is apart from and unrelated to his curricular activities? Of what lasting value to him is participation in such activities? How are such extracurricular activities evaluated by the college and medical school faculties?

Perhaps another and better way of stating the above characteristics is to say that desirable medical students will have a highly developed sense of social consciousness, a sound sense of values, and judgment. The degree to which the student possesses these qualities should be indicative of the level of his maturity.

In order to discuss these qualities intelligently, as related to the development of the individual, an attempt must be made to define them. One may define social consciousness as an awareness of the responsibility of the individual to society and of society to the individual. Further, social consciousness is the realization that one must translate this awareness into action for the good of himself and of the society in which he lives. In the area of values one is concerned with the ability of the individual to evaluate the worth to society of the endeavors and contributions of men. Judgment is the ability to act on the basis of knowledge, social awareness, and a sense of values. If any one of these areas is deficient, then judgment will be faulty.

To be sure, the physician may acquire these qualities to a greater or lesser extent after he has finished his formal education, and certainly the development, or loss, of these qualities continues through life. However, we cannot consider that the student lives in a vacuum with respect to these qualities during his formal education. The student may well ask, "Is my development in these areas to be left to chance, to be molded by prejudice and expediency? Do the college and the medical school have a direct responsibility in this area also?"

What is the responsibility of the college in this area? Perhaps too often the college faculty considers that its responsibility in this area ends with the classroom. There may be little realization that, with guidance, the college community—or society—can serve as a workshop for the application of the knowledge of the heritage of social consciousness and values which the student has acquired in the classroom; and that it serves also as an area for practice in the exercising of judgment. If the work of the classroom is to be related to the life of the student, the influence of the faculty must permeate the extracurricular experiences of the student in terms of interest and guidance. Furthermore, if the college faculty is to evaluate the student with reference to the level of his maturity, it must know how the student functions in his society. This end can be accomplished only if the student and the individual faculty members have close contact in the extracurricular areas of the college society. It appears that in many instances the positive benefits accruing to the student by participation in extracurricular activities of both student and faculty have been ignored as a responsibility of the college and university in the total educational process. Certainly the increasing size of student bodies has contributed to the decrease in intimacy between individual faculty members and students. However, one may ask how much pressures on and interests of the faculty, which are peripheral to the educational process, have contributed to this dilemma. Certainly there exists a challenge to college faculties for study and a re-evaluation of this important area of maturation for the individual student.

What is the responsibility of the medical school in this area? The medical school faculty

must itself be aware of the importance of these qualities in the physician and must seize every opportunity to build on the foundation which has been laid during the college years. The intimacy between student and faculty member, particularly in the clinical years, affords an excellent opportunity for influence in this area. But what if the college experience has been shortened, as is being advocated today by some medical educators? The opportunity for the student to develop these qualities before he enters medical school has been diminished. Therefore, more responsibility must fall on the medical faculty for guidance in these areas. Inevitably, the question must be asked whether or not the medical faculty is willing to assume and can discharge effectively this increased responsibility along with the other responsibilities which are unique to medical education. It is obvious that a decision concerning the desirable length of the college experience for prospective physicians involves much more than the courses which the student should take in college.

Another choice facing the student is the selection of the type of medical school he will attend. Of course, many factors enter into this choice, such as size of classes, location, cost, and general reputation. I would like to consider the alternative choices with regard to the intellectual environment which the medical student will encounter, and the impact these environments will have on the student. I am not so much concerned here with details of the curriculum he studies, or the competence of the teachers, or the methods of instruction, although I would not minimize their importance. I am concerned with the character of the medical school. For purposes of discussion, we can begin by characterizing schools in two categories: vocational schools and graduate schools. It must be realized that the terms vocational and graduate are used more in a traditional sense of attitudes rather than pedagogical techniques.

The premise of the advocate of the vocational school character is that all students are moving toward a more or less common goal of practice, which is a somewhat limited general practice, or what is commonly called the family physician. Therefore, each student should receive approximately the same training. Furthermore, it is assumed that the formal medical education of the student will include 4 years of medical school and usually not more than 2 years of postgraduate training. For these reasons, it is felt that the student must be prepared to handle almost every type of disease process when he has finished his formal training. Therefore, during his formal training, he must be given as broad an experience as possible in diagnosis and treatment. This means that he must see as great a variety of diseases as availability of patients and time permit.

In a school with this character, the emphasis in the basic medical sciences is put on the acquisition of as many facts as possible concerning the structure and function of the body in health and disease. There is little opportunity for the student to inquire into the processes by which these facts evolved, or even to recognize that they may not be facts in the sense of being the whole truth. There is little or no opportunity for the student to follow the promptings of his intellectual curiosity into areas of particular interest to him, for the course which he must follow is rather strictly prescribed and quite crowded, if he is to attain the above objective.

In the clinical years, the objective is to graduate an individual who has become adept in applying the facts and empiricisms he has learned to as many types of diseases as possible. The emphasis must be on "what" and not "why." The student must cover, even if superficially at times, all the various medical and surgical specialties and sub-specialties, often represented by even a few days of patient contact in these specialties.

The premise of the graduate school advocate is that the student entering medical school most often does not really know which of the many branches of medicine he will follow eventually as a career. Such branches are general practice, one of the specialties or sub-specialties, medical administration, industrial medicine, medical teaching or research, or a combination of the latter two. A second premise is that in modern medicine with its rapid advances, themselves dependent upon the rapid advances in the natural and social sciences, it is impossible to predict with much accuracy what the student must know to practice effectively a few years later. At best, one can hope to help the student learn how to educate himself in the field of medicine, with the expectation that this will be a continuing process of growth in his profession.

In a school with this character, the graduate school character, the emphasis in the basic medical sciences will be on the process of the evolution of facts, and their interrelations. The student will be encouraged, and given the opportunity, to have first-hand experience in the processes of investigation and interpretation, beyond that actually present in most laboratory experiments. Not that any great number of students will pursue medical research as a career, but that each will carry to his patients the investigative frame of mind. The student will be encouraged, and given the opportunity within reasonable limits, to follow his intellectual curiosity into channels of particular interest to him.

In his clinical years, the problem presented to the student by the patient will be approached as an illustration of the application of the investigative viewpoint, with all the implications of critical evaluation of variables and their interrelations. Such variables will include not only physical and biological factors but emotional, social, and economic factors as well. It will be recognized that this approach does not depend necessarily upon the particular type of disease process, as represented by individual specialties and sub-specialties, but is applicable to any patient.

The advocates of the graduate school character of medical education claim that in this approach the basic science teacher and the clinical teacher become hand-maidens of each other in the best sense of that phrase.

For clarity, I have oversimplified the problem by suggesting two extremes of medical school character. It is doubtful whether any school in this country is wholly representative of either of these extremes, but the character of each is determined by a mixture of these extreme qualities to varying degrees. The question is, "What sort of mixture serves the needs of the student best, and does each student need the same mixture?"

It is obvious that the character of the school will mold the student's concept of practice. It is not so obvious that the character may affect the student's performance and happiness in medical school. If a student who has been imbued with the graduate school approach in college is admitted to a medical school where the emphasis is predominantly vocational, he may in time experience a high degree of frustration, and he may rebel. The same is equally true of the reverse situation. Under these circumstances, the student may become a problem student, through no fault of his own.

I will mention some other aspects of the character of the medical school which present difficulties to the student and influence his effectiveness and happiness. Among these, one should consider the degree of real or implied competition between students as affected by the medical school character. Does the faculty have the reputation of failing a high percentage of students? How much emphasis is put on relative grades by the faculty? Is there a feeling of common purpose between the student and the faculty, or is it difficult for the

student to meet the faculty on a common ground of mutual understanding and respect? Is there a high degree of competition between departments for the attention and allegiance of the student, or is there a mutual feeling of respect between departments? Other aspects of the character of the medical school and their impact on the student will come to your mind, I am sure.

Surely not all students are necessarily aware of the precise nature of all the conflicts we have discussed, but all students are affected by these conflicts. As educators, we must accept our responsibility to re-evaluate the nature of these dilemmas. Medical school faculties should join with the faculties of colleges and universities in a re-examination of the type of undergraduate curriculum that best meets the joint objectives of the college and of the medical school. The undergraduate faculties should take a fresh look at the true place of the extracurricular portion of the college experience in the development of the student. They need to determine how this experience can be made more meaningful to all students, rather than to a minority. They need to determine how the faculty can best serve the student in this area. The medical faculties should re-assess the objectives of medical education both undergraduate and postgraduate in terms of the diverse needs of the students, realizing that, even though they belong to a select group, these medical students have varying capabilities, interests, and backgrounds. The need for a certain degree of flexibility in medical education for the individual student seems imperative. Re-arrangement of the medical curriculum and the introduction of different pedagogical techniques per se will not resolve the dilemmas discussed here unless the objectives are first clearly defined in terms of all the students. The alternative is to select students to fit the character of the medical school as it exists. It is doubtful whether the techniques for student selection for admission to medical school are sufficiently refined to assure the success, in most instances, of such a course of action. Also, medical faculties, as individuals, must constantly re-examine their attitudes with respect to their impact on the student—both good and bad.

One gets an impression that in many instances the student has lost his position at the core of the educational process, at all levels. Research, and one cannot truthfully deny its importance in education, administration, community service, and, in medical school, patient care have frequently pushed the student and his dilemmas into the background. All these activities are worth-while, and many are necessary, for the faculties of educational institutions; but the re-establishment of a balance between these activities and the needs of the student must be accomplished in those instances where imbalance exists.

The causes for the declining number of well qualified applicants in this country for admission to medical schools are certainly complex. As educators, we must consider the possibility, even probability, that, among these factors, the dilemmas and apparent conflicts the potential physician encounters in his educational experience contribute importantly to his decision not to study medicine.

REFERENCES

1. GLASER, R. J. Evaluation of the Applicant for Medical Education. *J. M. Educ.*, **33**:272, 1958.
2. SEVERINGHAUS, A. E. The Medical Student. *J. M. Educ.*, **34**:215, 1959.

Errata

I

The following paragraph should be included in the article by Sonkin entitled "Home Care in Medical Education: A Preliminary Assessment of the Cornell Home Care Program," *J. M. Educ.*, **35** (6):465-510, 1960:

Organized Home Care provides coordinated medical and related services to selected patients at home through a formally structured group comprising at least a family physician, a public health nurse, and a social caseworker, assisted by clerical service. For satisfactory functioning, patients must be formally referred, and there must be an initial evaluation, monthly review of records, and a final discharge conference. There must be ready access to in-patient facilities.

II

The name of Lloyd F. Strickland, Ph.D., should be added to the authors of the article entitled "Patterns of Influence: Medical School Faculty Members and the Values and Specialty Interests of Medical Students," *J. M. Educ.*, **35** (6):518-27, 1960.

ABSTRACTS FROM THE WORLD OF MEDICAL EDUCATION

ANGELA SANCHEZ-BARBUDO, PH.D.
Abstract Editor

Les Actualités Pédiatriques (The Pediatric Actuality). De la Broquerie Fortier, L'Union Médicale du Canada, T.89, No. 3, pp. 317-324 (March), 1960.

The IXth International Congress of Pediatrics (held in Canada in July, 1959) which was attended by close to 3,000 pediatricians representing 65 countries, has confirmed once more, by the vast scope of its scientific communications, the medical, social, and economical interest of preventive and curative medicine which benefits today—to varying degrees—the children of the world. Taking into account the most important works presented at the Convention, as well as the latest clinical and experimental achievements of pediatrics, Professor Fortier (of the *Clinique Pédiatrique*, Laval University, Quebec) discusses in this paper certain aspects of childhood pathology. This “tour d’horizon”—always remaining on the informative plan—takes the author from certain problems of cellular biology (important for the understanding of a great number of diseases or abnormalities encountered at the very beginning of the infant’s physical and psychic development) to the pathology of nutrition, which is, according to the author, the number one of the specific problems of infant care. A special section is devoted to recent accomplishments in urinary pathology applied to children. In his last chapter, which deals with “Pediatric Education,” Dr. Fortier expresses his conviction that pediatrics occupies today a key position within the development of the new trend toward “anthropologic medicine,” or “the medicine of the whole patient.” The child, it is pointed out, can be said to be “man in

the evolutive stage,” his growth depending on hereditary and constitutional factors and, more specifically, on the alimentary and hygienic care provided, while psychic development depends on its neuro-vegetative system in full anatomic evolution, on his reactions to internal emotions, and, more specifically, on the influence of his familiar environment (as well as on the cultural and social structure of the civilization of his time). It is the task of pediatrics to “regulate and guide the first biological and social experiences of the child.” Seen from this point of view, the child’s development is apt to be altered fundamentally by all the problems confronted by the pediatrician and to place pediatrics on a much loftier plan, with a greatly wider horizon than that of merely curative medicine: from a “children’s specialist,” the pediatrician is transformed into the “physician of a cycle of human life.” Thus integrated into the “medicine of man,” pediatrics becomes responsible for the life of mankind, apt to fertilize the whole of medical science. This does not mean, however, a monopoly for the pediatrician to exercise this kind of medicine: on the contrary, the author claims that, in its fundamental elements, all medical practitioners can and should exercise it, according to the need of the hour. In order to respond to the needs of modern childhood, various categories of pediatricians are required: in the first place, any medical practitioner must have a rather wide knowledge of pediatrics; therefore, a basic pediatric education must be provided to all medical students. The practitioner-pediatrician, whose predilected field is pediatric medicine, constitutes a second cate-

gory, and a third, placed above the two former ones, is that of the "pediatric consultant," the true specialist in pediatrics who is entrusted with hospital practice and university teaching.

Krisen des Altwerdens (Crises of Aging).

F. BERNER and H. HOFF. *Vita Humana*, Vol. 2 (Nos. 3-4), pp. 165-87, 1959.

There is today growing preoccupation with a series of urgent problems connected with the increase of aged persons within the population of most countries. A great number of recent publications, as well as the foundation of numerous societies for geriatrics, give evidence of the importance of a "sane and harmonious aging process" in our modern society, and of the difficulties involved in attaining it (cf. the bibliography at the end of this paper). Sociological statistics frequently emphasize the phenomenon of *over-aging* as a population problem: the negative judgment implied in this term complicates the problem still further, since it reflects the fact that the increasing percentage of old people is often felt as a threat to the material existence. On the other hand, personal attitudes toward one's own aging also play a role in the investigation and evaluation of old age problems. Therefore, in order to approach the subject with the necessary objectivity, an emotional distance must be kept in regard to the fact of an "over-aging" population, as well as to one's own uncontrollable aging process. A solution to the many problems of old age can be attempted only after having secured a thorough knowledge of the multiple factors which condition its crises. The authors (both members of the medical staff of the *Psychiatrisch-Neurologische Universitätsklinik*, Vienna) initiate their investigation of these factors with an evaluation of the somatological and mental structure of the normal and of the pathological aging process (with special emphasis on the problem of "decompensation" in aging persons); thereafter, the same method is applied to the psychic changes. For a deeper understand-

ing of those situations which usually cause psychological problems in old age it appears necessary to study the crisis of aging generally from an existential point of view (taking into account the ideas of Heidegger, Schulte, Camus, and the theories of Erikson which stress the *identity* problem). Other important aspects of the study of psychological disturbances in old age are brought to light by an analysis of the social environment and the psychodynamics of the individual. Taking into account all these facets, the conclusion is reached that mental disturbances in old age must be considered consequences of a collapse of the brain tissue (reduced by the genetically preformed pathological aging process), aggravated by serious psychological strain. This collapse, therefore, has to be regarded as a *psychosomatic* phenomenon. Insight into the multifactorial conditioning of old age psychoses provides, as the authors point out, a good basis for many preventive measures and methods in mental hygiene.

Planning the Future in Medical Practice: An Experiment in Medical Education. J. M. LAST. *The Medical Journal of Australia*, Vol. I (No. 12), pp. 470-71 (March 19), 1960.

The first year or two after graduation are a critical period in the newly qualified doctor's life: his formal education being behind him, it is the time when he must undertake his final preparation for life as a medical practitioner. During this time he usually receives little help and guidance and scarcely any further formal education, and yet his success or failure in whatever branch of medicine he chooses may depend on what happens during those first critical years. A recognition of the plight of the young new doctor lies at the basis of the experiment in medical education at the graduate level recently undertaken by the University of Adelaide (South Australia) and which is described in this report. Starting in 1958, regular meetings have been organized between established practitioners and pre-registration hospital residents, at which

planning the future in medical practice has been the central topic of discussion. The method employed could be called "open seminar" or "group discussion," but without implying too much formality. Each session has been attended so far by the President of the South Australian Branch of the British Medical Association, by one or two representatives of the Post-Graduate Committee in Medicine (usually a young surgeon and a young physician) and by two or three representatives of the Australian College of General Practitioners. All these together constituted the "panel" which has been asked questions, at each session, by a group of young graduates (numbering between six and twelve). Among the various topics discussed, careers in medicine, financial problems, and young practitioners' personal problems had a prominent place. One of the most popular subjects was the nature and method of preparation for a specialist career. Here, it is pointed out, a definite cleavage of opinion between the older general practitioner and the younger specialist revealed itself regarding the desirability of doing some general practice as part of the training for a specialist or consultant career. There has also been a good opportunity to air the differences of opinion about whether post-graduate training for a specialist career should be undertaken at home or abroad (most of the panel agreed that the United Kingdom, from which most medical tradition of the country is derived, offers better opportunities for postgraduate training than does the U.S.A.). Also stressed in this report is the fact that some of the questions and comments of the hospital residents have implied a belief in the "innate inferiority" of general practice, whereas the representatives of general practitioners on the panel were able to make it clear that this is far from the truth. Some of the young graduates asked for practical details about the equipping and running of a general practice, and have been invited to visit a practice and see for themselves. Almost complete unanimity has been reached regarding the *ideal*—at present unattainable, except by a favored

few—program of hospital training for medical practice: a rotating internship of 2 years, including general medicine, general surgery, obstetrics, gynecology, pediatrics, casualty duty, and anesthetics. Another conclusion reached during the sessions described was that some period in general practice was desirable as part of the preparation for a career, whether general or specialized; and, furthermore, that there was a need for general practice training units specially geared for teaching and research.

Problèmes d'Ordre Médical et Sanitaire Posés par la Catastrophe d'Agadir (Medical and Sanitary Problems Raised by the Catastrophe of Agadir). J.-P. SOULIER. *La Presse Médicale*, No. 14, pp. 551-52 (March 19), 1960.

Agadir, once a city of 35,000 inhabitants, was reduced to ruins by the earthquake of March 1, 1960, which caused over 10,000 victims. The tasks confronted by the doctors and medical staff attending the victims are summed up in this article (written a fortnight after the catastrophe took place), with special emphasis on some of the essential difficulties and problems, part of which remain still to be solved. The functions of the doctors, which varied according to time and place, are divided in this report into different categories following their chronological order: Section I, for instance, deals with the "Immediate Tasks in Agadir Itself;" Section II, with the "Initial Treatment of the Injured in the Hospitals" (stressing the problem of the first blood transfusions). Section III discusses "The Problems of the Third and Fourth Days" after the catastrophe, such as problems concerning disinfection, disinsectization, "deratization" (in the latter, hundreds of kilos of warfarin placed among the rubbish were of great help); the care and sanitation of the evacuated people concentrated in camps, the secondary evacuation of certain hospitals, etc.

A Report of the New England Regional Medical-Dental Education Plan,

1956-1959. ROBERT H. KROEPSCH, Executive Secretary (issued by the New England Board of Higher Education, 11 pp.).

In 1956, the New England Board of Higher Education recommended to the people, through their legislatures, a regional medical-dental education plan designed to encourage the medical and dental schools of the area to provide more places for qualified New England students. The plan provides that each New England medical school shall receive \$2,500 annually—each dental school \$1,500—for each student enrolled from each state in excess of the number enrolled from the same state in 1956. This plan was adopted in 1957 by New Hampshire, Vermont, and Maine, and in 1959 by Rhode Island. Its results, however, as shown in this report, did not measure up to expectations: while total enrollments in the nation have increased, the total number of New England students enrolled in all of New England's six medical schools has steadily *decreased* during those last 3 years (only the Vermont School of Medicine increased its student population under the plan); in the dental schools, only two states, Massachusetts and Vermont, showed an increase as compared with 1956. Yet, in spite of this downward trend, the fact is that New England does enjoy *at present* a favorable physician-population ratio (155.4 per 100,000, as compared with 118.4 for the whole nation). New England's low input of medical student residents into the national pool considered along with their relatively high physician-population

ratio, demonstrates clearly, as the report points out, that New England is draining off graduates from other states and other countries, usually with much less favorable ratios, to provide doctors and dentists for their population. After a careful review of all these facts, the Board concluded that a modification of the present medical-dental plan was necessary and on October 18, 1959, it adopted a resolution (which has been forwarded to the governors of the six states and the deans of the eight schools) recognizing the insufficiency of the previous plan and recommending that the states concerned make a greater effort to support medical and dental education to a level commensurate with their resources and responsibilities. This would include the establishment of (a) additional publicly supported medical and dental schools, (b) contractual arrangements between individual states and medical and dental schools, and (c) programs of financial aid to encourage interest in medical-dental education and to provide assistance to prospective students. A series of more specific recommendations concerning individual states were also made by the Board. Three Appendices joined to the present report give a break-down of the statistical data concerning the number of New England residents enrolled in this region's medical and dental schools during the 1956-1959 period, as well as of the figures regarding the distribution of funds for the participating states under the New England Medical-Dental Education Plan.

NEW BOOKS

KENNETH E. PENROD
Book Review Editor

Review

Teaching Comprehensive Medical Care. A Psychological Study of a Change in Medical Education. By KENNETH R. HAMMOND and FRED KERN, JR., M.D. Published for the Commonwealth Fund by Harvard University Press, 1959. 642 pp. \$10.00.

This volume should be required reading for those making changes in medical education. It shows how psychological methods can be adapted in the study of students of medicine. It is particularly important because of the care with which the significance and limitations of the methods and the results are described. The authors are bold, courageous, and forthright in their use of classical and newly developed methods to study almost imponderable variables in education. The major objective was the observation of a new program of teaching of "comprehensive medical care" in the General Medical Clinic of the Denver General Hospital, and comparing it to the results of classical teaching by departments in the outpatient department of the Colorado General Hospital.

In the methodology section, Part III, the authors describe the development of unique test procedures and give the results in a lucid summary. The sound-film interview of a patient is used as a technique for evaluating students' responses in the study of the patient. This is a promising procedure for the physician, teacher, and psychologist. In addition, the method of case study is advanced by unique procedures involving the classification of facts, the study of students' thinking, and that of the staff. This represents a contribution to the field of problem-solving in the difficult area of the case method in the care of the patient.

Clearly outlined are the objectives and results of the teaching program for comprehensive care of outpatients. Also, the frustrations and conflicts from attempting to care for patients who had serious limitations of economic and so-

cial backgrounds are described. The problems are sharply drawn, concerning communications within the staff, of attempting to set up control groups of students in the same school, of the student's image of a "good" patient and of a "crock," and the student's concept of what he believed he should learn about patients in his senior year.

The psychological studies can be read from the beginning of the book concerning the particular studies of the General Medical Clinic, or they can be read "backwards" beginning with Part V of the book. In either event, the reader will find clarity of purpose and method, complexity of statistics, but excellent summaries of the possible meaning and the limited value of the data.

Reading the last section, Part V, gives the reader an immediate introduction to the problems of rating student performance and the relations between individual attributes of students and their performance in medical school. It shows the risks (p. 561) of defeat whenever the objectives of a program are not accepted as important by those who participate in them. Then one may proceed in an orderly approach from the front of the book.

The authors are to be commended in the definitive quality of their presentation of results that range from determinate to indeterminate, from positive to negative, and from desirable to undesirable. Probably the wise contribution of the authors is the clear warning of how limited the experiment was, and how "deadline research" creates major problems in devising and validating methods at excessive speeds. The reader will appreciate also the clarification of many problems in medical education that may be subjected to test for many years in the future, and the outlining of possible methods of approach. The report warns the naive to proceed with care in evaluation studies of medical education.

THOMAS HALE HAM, M.D.
Western Reserve University

Abstracts

Annual Review of Medicine, Volume 11, 1960. Edited by DAVID A. RYTAND and WILLIAM P. CREGER. Palo Alto, California: Annual Reviews, Inc. 402 pp. \$7.00.

In this and other recent volumes in this work may be noted a trend toward more concentrated discussions of relatively limited fields; also, authors from foreign countries are contributing to the broad coverage of medical science. Twenty-three chapters comprise this volume.

A Short Synopsis of Human Protozoology and Helminthology. By L. R. S. MACFARLANE. Baltimore: The Williams & Wilkins Company, 1960. 229 pp. \$7.50.

This book is based on notes used to prepare students at the Royal Army Medical College for the Diploma of Tropical Medicine and Hygiene and also for the training of pathologists. It is to the latter group that this book should have particular appeal in this country. An effort has been made to assimilate considerable literature on the subject into a digestible form, and much of the work is a condensation of material from Craig and Faust's *Clinical Pathology*. In addition, however, it contains many personal findings and experiences of the author in various parts of the world.

A Primer of Electrocardiography. By GEORGE E. BURCH and TRAVIS WINSOR. 4th ed. Philadelphia: Lea & Febiger, 1960. 283 pp. 286 illustrations. \$5.00.

Since this book is intended for beginners in electrocardiography, it was considered advisable to retain the fundamental nature of the monograph. No attempt was made to discuss in detail the electrocardiographic manifestations of cardiac disease. The revisions in this edition have not been extensive. The discussions of right and left bundle branch block and right and left ventricular hypertrophy have been extended. The influence of quinidine on the electrocardiogram has been presented. New illustrations have been added, and tables in the appendix have been modified. During these revisions every effort was made to consider the needs of the beginner regardless of his specialty. The book continues to be a supplement to the vast material in the medical literature on electrocardiography and spatial vectorcardiography.

Fundamentals of Clinical Hematology. By BYRD S. LEAVELL and OSCAR A. THORUP, JR. Philadelphia: W. B. Saunders Company, 1960. 481 pp. \$10.00.

This book is conceived as an introduction to hematology for the student meeting the subject for the first time in a crowded curriculum and for physicians in active practice, similarly pressed for time. It is meant to be comprehensive but not encyclopedic. Emphasis is placed on a consideration of the abnormal mechanisms that are responsible for the manifestations of the different diseases. A presentation of the morphologic and functional characteristics of the various cell lines is followed by discussions of the normal physiology of erythropoiesis, leukopoiesis, and hemostasis. In each instance the current theoretical considerations are discussed, with particular reference to their application in diagnosis and treatment. The discussions of most of the clinical syndromes are accompanied by short accounts of actual cases which illustrate appropriate points. Special consideration has been given to the diagnosis of patients who present the problems of anemia, hemorrhagic diathesis, or lymphadenopathy. A separate chapter is devoted to hematologic techniques.

The Health of People Who Work. Edited by ALBERT Q. MAISELL. New York: The National Health Council, 1790 Broadway, 1960. 258 pp. \$4.50.

The collective viewpoint on occupational health expressed in this book has been developed from contributions of foremost authorities in every phase of occupational health brought together through the 1959 National Health Forum. From more than 25 forum meetings this book brings together a vast amount of material. Although it offers practical help and guidance for planning and improving occupational health programs for large and small industries—and is also useful to those whose work involves cooperation with business and protecting the health of workers—it does not provide all the answers. It is the hope of the National Health Council, its member agencies, and the forum committees that this work will stimulate greater interest in services, training, and research in occupational health among all who should be concerned with the health protection of the nation's workers—and prompt a desire on their part to apply presently available knowledge to improve the health

of workers, their dependents, and the communities in which they live.

Elementary Physiology—A Laboratory Guide. By OSCAR E. TAUBER, ROBERT E. HAUPT, and DELMA E. HARDING. New York: The Macmillan Company, 1960. 190 pp.

College instruction often necessitates presentation of courses to students whose major academic interests are in fields other than that offered in a so-called "service" course. Laboratory exercises and textual materials included in this guide for elementary physiology were originally compiled as a set of directions designed specifically for freshmen college students who might not have had high school biology, and who would have had no college biology. Also, some of these students would not have been exposed to chemistry in high school, but might be concurrently enrolled in first-year college general chemistry, and would eventually take organic chemistry, and, perhaps, biochemistry. This collection of laboratory exercises attempts to meet the need of students whose academic aim is something other than training in zoology or physiology. Because of the lack of biological background of these students, the collection of basic physiological exercises is supplemented with a minimum of anatomical information needed to understand the functional concepts.

Nose and Throat Histology: Photomicrographs. By JAMES A. MOORE. New York: The Macmillan Company, 1960. 64 pp. \$7.50.

The photomicrographs of this monograph were made from materials and sections available in the Mosher Laboratory of the Massachusetts Eye and Ear Infirmary and the Mallory Laboratory of the Massachusetts General Hospital. The material is designed primarily for residency training at a basic science level and for others interested in this field.

Thoracic Surgery before the 20th Century. By LEW A. HOCHBERG. New York: Vantage Press, 1960. 841 pp. \$15.00.

This work is, apparently, unique in being the only book which devotes itself entirely to the history of thoracic surgery. The work contains many direct quotations. The object in presenting the material in this manner is to give authenticity to the present work and to help correct some of the misquotations noted in the literature. In the main an attempt has been made to retain the language and spirit of the original work quoted. A companion volume, *A Source Book of Thoracic Surgery in the 20th Century*, is now in preparation and is expected to be ready for publication sometime in 1963.

71ST ANNUAL MEETING
OF THE
ASSOCIATION OF AMERICAN MEDICAL COLLEGES

Diplomat Hotel
Hollywood Beach, Florida

October 31–November 1, 1960

INFORMATION

Hotel

It is important that requests for hotel reservations be made directly to the Diplomat Hotel in Hollywood Beach, Florida, and not through agencies or hotels in other cities.

Your cooperation is requested in sharing a double room with another member if possible and in notifying the hotel to this effect.

Tickets for the Annual Dinner, Monday evening, October 31, will be given out at the time of registration, as this will be included in the American Plan rate at the Diplomat Hotel.

Registration

The Registration Desk will be open as follows:

Saturday	October	29	9:00 A.M.– 3:00 P.M.
Sunday	October	30	9:00 A.M.– 7:00 P.M.
Monday	October	31	8:00 A.M.– 7:00 P.M.
Tuesday	November	1	8:00 A.M.–12:00 NOON

Women's Activities

Information regarding planned activities will be available at the Registration Desk.

PRE-CONFERENCE MEETINGS

Closed Meetings

Saturday, October 29 and Sunday morning, October 30: Meeting of the Medical School-Teaching Hospital Section of the Association. (Section members and Deans only.)

Sunday, October 30: Several standing committees of the Association will hold meetings during the morning.

Sunday, October 30, 11:00 A.M.: Executive Session of the Continuing Group on Student Affairs. (Limited to designated representatives of the medical schools.)

Sunday, October 30, 2:00 P.M.: Executive Session of Institutional Members.

Open Meetings

Saturday, October 29 and Sunday, October 30: The 4th Annual Meeting of the Continuing Group on Student Affairs.

Annual Reports of Standing Committees

Mimeographed copies of the annual reports of the standing committees of the Association will be provided at the time of registration. Open hearings on each of these reports will be held Monday, October 31, at 4:30 P.M.

PROGRAM—71ST ANNUAL MEETING

Sunday, October 30

"Highlights of AAMC Research and Special Studies"

- 3:30 P.M. "The 1960 Medical School Graduate"—Helen Hofer Gee, Ph.D., Director of Division of Research
"His Pre-Medical Background"—Charles F. Schumacher, Ph.D., Assistant Director, Division of Research
"His Perception of His Faculty Peers and Environment"—Edwin B. Hutchins, Ph.D., Research Association, Division of Research
"His Performance as a Product of Personal Characteristics and Environment"—Helen H. Gee, Ph.D., Director, Division of Research
4:15 P.M. "How Much of a Problem Is Medical School Employment?"—J. Frank Whiting, Ph.D., Assistant Director, Division of Operational Studies
4:30 P.M. "Faculty Staffing Patterns"—Lee Powers, M.D., Director of Operational Studies
4:45 P.M. "Trends in Financing Medical Education"—Ward Darley, M.D., Executive Director

Monday, October 31

- 9:30 A.M. Introduction of New Deans and Foreign Visitors, Announcements
9:30 A.M. Presidential Address—Thomas H. Hunter, M.D., Dean, University of Virginia School of Medicine
10:00 A.M. "Functions and Responsibilities of a University"—Fred C. Cole, Ph.D., President, Washington and Lee University
10:30 A.M. "Professional Practice and Medical Education"—John Ellis, M.D., Secretary, Association for the Study of Medical Education, London, England
11:00 A.M. "The Doctor's Responsibility in a Changing World"—Howard Rusk, M.D., Chairman, Department of Physical Medicine and Rehabilitation, New York University School of Medicine; Associate Editor, *New York Times*
11:30 A.M. "The Medical Schools of the United States and Their International Opportunities and Responsibilities"—Robert S. Morison, M.D., Director for Biological and Medical Research, Rockefeller Foundation
12:00 NOON Lunch
1:45 P.M. "The Use of Private Patients in Medical Education"—R. A. Macbeth, M.D., Associate Professor of Surgery, and W. C. MacKenzie, M.D., Dean and Professor of Surgery, University of Alberta Faculty of Medicine
2:05 P.M. "Teaching with Paying Patients—A 30-Year Experience"—Robert G. Page, M.D., Assistant Dean and Associate Professor of Medicine, and Wright Adams, M.D., Chairman of Department of Medicine and Professor, University of Chicago

- 2:25 P.M. "Clinical Faculties and Medical Service Plans"—C. T. Hardy, Jr., Director, Department of Clinics, Bowman Gray School of Medicine
- 2:45 P.M. "Attitudes toward Problems of Patient Management: A Study of Senior Medical Students"—David I. Cheifetz, Ph.D., Presbyterian-St. Luke's Hospital; Jack Saporta, M.A., and Paul E. Nielson, Ph.D., University of Illinois College of Medicine
- 3:05 P.M. "The Referral Process in Medical Care and the University Clinic's Role"—T. Franklin Williams, M.D., Assistant Professor of Preventive Medicine and Medicine, Kerr L. White, M.D., Associate Professor of Preventive Medicine and Medicine, W. L. Fleming, M.D., Professor of Preventive Medicine and Medicine, School of Medicine, and Bernard G. Greenberg, Ph.D., Professor of Biostatistics, School of Public Health, University of North Carolina
- 3:25 P.M. "A Bedside Approach to the Study of Medical Costs"—William A. Sodeman, M.D., Dean and Professor of Medicine, Jefferson Medical College, and John A. Nelson, M.S., Assistant Director, Jefferson Medical College Hospital
- 3:45 P.M. "An Interprofessional Seminar at the University of Pittsburgh"—C. H. William Ruhe, M.D., Associate Dean, and Paul L. McLain, M.D., Professor of Physiology and Pharmacology, University of Pittsburgh
- 4:05 P.M. "Preliminary Report of the Internship Study"—Richard H. Saunders, M.D., Study Director, Division of Operational Studies
- 4:30 P.M. Open Hearings on Annual Reports of Committees
- Animal Care
 - Audio-Visual Education
 - Continuation Education
 - Editorial Board
 - Federal Health Programs
 - Financing Medical Education
 - International Relations in Medical Education
 - Internships, Residencies and Graduate Medical Education
 - Licensure Problems
 - Medical Care Plans
 - Medical Education for National Defense
 - Medical School Architecture
 - Medical School-Affiliated Hospital Relationships
 - Public Relations
 - Research and Education
 - Veterans Administration-Medical School Relationships
- 7:00 P.M. Annual Dinner of the Association
- Presentation of the Borden Award in the Medical Sciences for 1960—Alfred Gilman, M.D., Chairman of the Committee on the Borden Award
 - Presentation of the Abraham Flexner Award for Outstanding Service to Medical Education—Robert A. Moore, M.D., Chairman of the Committee on the Flexner Award
 - Third Alan Gregg Memorial Lecture—Joseph T. Wearn, Ph.D., Vice-President for Medical Affairs, Western Reserve University

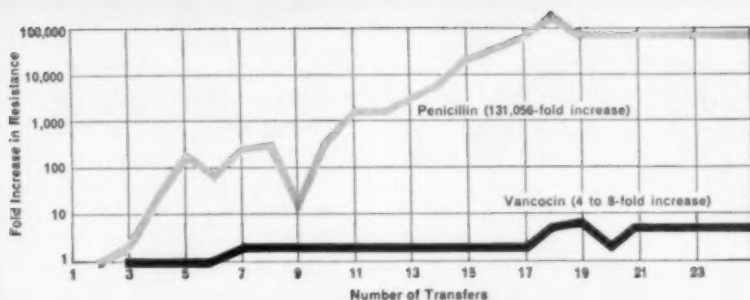
Tuesday, November 1

- 9:00 A.M. "A Revised Part III as a New Approach to the Evaluation of the Internship Experience"—John B. Hubbard, M.D., Secretary, National Board of Medical Examiners and Chairman, Department of Preventive Medicine, University of Pennsylvania School of Medicine
- 9:15 A.M. "Characteristics and Future Plans of Medical Students Engaged in Elective Research"—John T. Cowles, Ph.D., Director of Educational Planning Schools of the Health Professions, University of Pittsburgh
- 9:35 A.M. "Can We Find More Efficient Methods of Providing Physicians with Scientific Information?"—T. F. Davies Haines, President, Ciba Pharmaceutical Products, Inc.
- 10:00 A.M. Business Meeting
Roll Call
Voting on new members
Report of Nominating Committee and Election of Officers
Report of Chairman of Executive Council—Thomas H. Hunter
Report of Executive Director—Ward Darley
Report of Secretary—Richard H. Young
Report of Treasurer—J. Murray Kinsman
Report of Editor of *Journal of Medical Education*—John Z. Bowers
Report of Director of Operational Studies—Lee Powers
Report of Director of Research—Helen H. Gee
Annual Report of Committees
New Business—Resolutions
Installation of Officers
- 12:30 P.M. Lunch

OPEN MEETING OF THE 1960 AAMC INSTITUTE

- 2:00 P.M. Introductory Remarks—Dr. Carlyle Jacobsen, Chairman, Planning Committee
- 2:15 P.M. "Limitations of Medical Care Attributable to Medical Education"—Dr. Thomas McKeown, Professor of Social Medicine, Birmingham, England
- 3:00 P.M. "The Elements of Good Patient Care"—Dr. David P. Barr, Professor of Medicine, Emeritus, Cornell University Medical College
- 4:00 P.M. Panel Discussion: "On Establishing a New Medical School"—Participants to be announced

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NEWS FROM THE MEDICAL SCHOOLS

Georgia Regents Confirm Top Administrative Posts

The Board of Regents of the Medical College of Georgia, in two successive meetings, approved the appointment of Dr. WALTER G. RICE; as Dean and Dr. HARRY B. O'REAR as President.



DR. WALTER G. RICE

Dr. Rice, who has served for the past ten months as acting Dean, has been a professor of pathology at the Medical College since October 1955. He received his M.D. degree from the University of Toronto and interned at Vancouver General Hospital. Qualified as a pathologist, he held positions successively at Baylor University Hospital and St. Louis University School of Medicine before joining the faculty at the Medical College of Georgia.

He has worked on special research projects in immuno-pathology, fluorescent antibody techniques and studies in neoplasms. At present, under a grant provided by the NIH, Dr. Rice is engaged in studies on fluorescent antibody methods in diffusible components of cells.

Dr. O'Rear came to the Medical College of Georgia in 1950 as associate professor of pediatrics. In July 1953 he was

named Dean of the School and in 1958, upon the retirement of Dr. EDGAR R. PUND, was appointed Acting President.

Working as a team, the two doctors have earned the reputation of initiating a program that assures the Medical College an outstanding position in the field of medicine as well as one of value to the state of Georgia.

Albany

Dr. JOHN F. FILIPPONE, recently promoted to the rank of clinical professor in the department of medicine, will also take over the newly-created post of head of the cardiac clinics in the Albany Medical Center. A specialist in cardiovascular diseases, Dr. Filippone was for a number of years a consultant in cardiology to the State Health

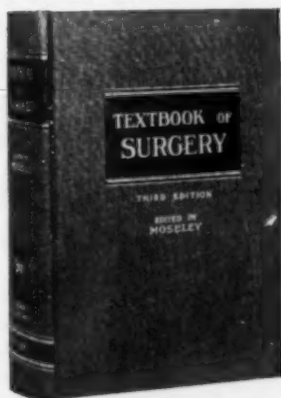
Department and is currently chief of staff at Albany Hospital.

Boston

A Doctor of Nursing Science degree, the first doctorate in the country which specifically identifies nursing in the degree title, has been established at the Boston University School of Nursing, according to the

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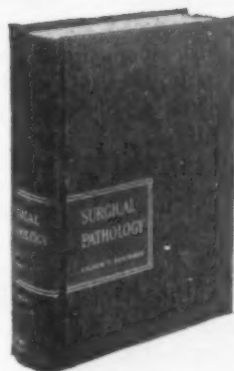
"Future textbooks of surgery may very well be measured by how they compare with this third edition of Moseley."—*The Pennsylvania Medical Journal*. "This indeed is an outstanding textbook of surgery. I am particularly impressed with the rather complete but concise information presented in the various chapters and also by the excellent and profuse illustrative matter."—*Chairman, Dept. of Surgery*. "The diagrams are of great value for the medical student. I cannot praise the color drawings of Dr. Netter highly enough. . . . I shall personally recommend it to the medical students here in the Department of Surgery."—*Assistant Professor of Surgery*.

Edited by H. F. MOSELEY, M.A., D.M., M.Ch. (Oxon), F.A.C.S., F.R.C.S. (Eng.), Assistant Professor of Surgery, McGill University. Written by 40 eminent surgeons and educators. 1959, 3rd edition, 1336 pages, 6 $\frac{3}{4}$ " \times 10", 738 text illustrations, 108 color plates. Price, \$17.00.

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By LAUREN V. ACKERMAN, M.D., Professor of Surgical Pathology and Pathology, Washington University School of Medicine. In Collaboration with HARVEY R. BUTCHER, JR., M.D. 1959, 2nd edition, 1096 pages, 6 $\frac{3}{4}$ " \times 9 $\frac{3}{4}$ ", 1114 illustrations. Price, \$15.00.



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school's Dean, MARIE FARRELL. The first doctoral offering is in psychiatric nursing, with programs in other clinical areas to be instituted in the next two to four years. The Dean asserted that the objective of the advanced psychiatric nursing program will be to develop further the nurse's role, to include well-defined psychotherapeutic responsibilities which she undertakes in collaboration with the psychiatrist. Extension of this nurse-therapist's role into research, teaching, administration, and consultation will be further utilization of the knowledge gained in her doctoral study, Dean Farrell said.

Bowman Gray

Dr. DONALD M. HAYES, instructor in internal medicine, has been appointed Assistant Dean of the School of Medicine. In his new capacity, Dr. Hayes will be in charge of student admissions and premedical relations, and will serve as chairman of the Committee on Admissions and Scholarships. It is anticipated that increased emphasis will be placed on student recruitment and on the evaluation of methods used in the selection of students, university officials disclosed. Dr. Hayes will continue as a full-time faculty member of the department of internal medicine with active participation in teaching and hematology research.

Cincinnati

A \$1.6 million, four and one-half story building is being planned as an addition to the school's Kettering Laboratory to provide badly needed facilities for research, graduate instruction, and medical services according to Dr. WALTER C. LANGSAM, UC President. The new wing will join the present laboratory structure. Facilities also will be provided for the work of the coroner of Hamilton County. Here the division of industrial and forensic pathology of the laboratory, under the direction of Dr. FRANK P. CLEVELAND, will be housed together with a laboratory of forensic toxicology and a morgue. A special feature of the building

is a ground floor assembly room, seating 156; providing facilities for conferences and meetings at the laboratory. Direct gifts from American industries will finance the structure.

Colorado

Dr. HENRY H. BREWSTER, former assistant professor of psychiatry at Western Reserve School of Medicine, joined the faculty of the Colorado School of Medicine July 1 as associate professor in the department of psychiatry. Dr. Brewster received his M.D. degree from Harvard Medical School where he served on the faculty before going to Western Reserve.

Columbia

The College of Physicians and Surgeons has named two new department heads. Dr. DONALD G. MCKAY has been appointed chairman of the department of pathology and Delafield Professor of Pathology. Dr. EDWARD C. CURNEN, Jr., was named chairman of the pediatrics department and to serve as Carpentier Professor of Pediatrics. Dr. McKay was formerly assistant professor of pathology at Harvard Medical School and Dr. Curnen served on the University of North Carolina medical faculty.

Dartmouth

Three new department chairmen were named recently to the Medical School faculty. Dr. KURT BENIRSCHKE was named professor and chairman of the department of pathology. Dr. Benirschke, pathologist for the Boston Lying-In Hospital since 1956, has also been associate in pathology at Harvard Medical School. He succeeds Dr. RALPH E. MILLER, who was killed in a New Hampshire airplane crash in February 1959.

Dr. R. CLINTON FULLER was appointed professor of microbiology and chairman of the department. Dr. Fuller has been chief of the section of microbiology at Brookhaven Laboratories since 1954, and for the past two years has been a visiting scientist at Oxford University.

Dr. LAFAYETTE NODA will take over the chairmanship of the department of biochemistry. He succeeds Dr. MANUEL MORALES who resigned this position on July 1 to accept a Career Investigatorship of the American Heart Association.

A public convocation on "The Great Issues of Conscience in Modern Medicine" and cornerstone ceremonies for Dartmouth's new \$3.5 million medical sciences building were held Sept. 8-10 on the medical school campus. The dual events included panel discussions and four major addresses. Dr. Ward Darley, Executive Director of the Association of American Medical Colleges was principal speaker at the cornerstone ceremony.

Duke

Two major administrative changes in the Duke Medical Center were announced recently. Dr. CLARENCE E. GARDNER, professor of surgery, has been named acting chairman of the surgery department. He is serving in the absence from this post of Dr. DERYL HART, who is now president pro-tem of the university and will head the institution until a permanent president takes office.

Dr. GUY L. ODOM, professor of neurosurgery, has been appointed head of the surgery department's division of neurosurgery, succeeding Dr. BARNES WOODHALL, who took office on July 1 as Dean of the School of Medicine. Dr. Gardner has been a member of the Duke Medical Center faculty since 1930. Dr. Odom joined the Duke faculty in 1943 after having taught at Louisiana State University and McGill University in Montreal, Canada.

Georgetown

Dr. CUTTING B. FAVOUR, former director of the department of immunology, Palo Alto Medical Research Foundation in Palo Alto, Calif., has joined the Georgetown faculty of medicine July 1 as professor and chairman of the department of preventive

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medicine and as associate professor of medicine. Dr. Favour's previous faculty positions have been at Harvard Medical School and Stanford.

Georgia

Dr. WILLIAM F. HAMILTON, chairman of the department of physiology and a member of the faculty since 1934, has retired as departmental chairman but has been appointed professor emeritus and will continue with his cardiovascular research projects at the school. Dr. PHILIP DOW, a veteran of 25 years on the faculty, has been appointed department chairman to succeed Dr. Hamilton.

Appointed chairman of the department of obstetrics and gynecology is Dr. FRED P. ZUSPAN, who has been associated with Western Reserve University School of Medicine since 1958. He succeeds Dr. RICHARD TORPIN, who retired as chairman of obstetrics and gynecology in June of 1958.

Harvard

Construction of the first two buildings of a new Harvard Medical Center will begin in the fall, it was revealed recently. Agreement of the Boston City Council to sell portions of land to Harvard cleared the way for the new development which will run to \$50 million in the next five to ten years. The program, immense in scope, calls for construction of the largest private medical library in the world on Peter Bent Brigham Hospital property and Shattuck Street; rebuilding of the interiors of existing marble structures; and a modern hospital. The development will take place in six stages. Topping the list is construction of the first three floors of the environment hygiene and nutrition buildings of the Harvard School of Public Health. Ultimately they will be 12 stories high. Project Number 2, the Francis A. Countway Library, will combine Harvard's Medical Library and the Boston Medical Library, and will be available to students from the three medical schools and doctors of New England medical societies.

New wings for teaching and research will link each of the pair of buildings on each side of the present quadrangle that runs from Shattuck to Longwood Avenue. Work toward the project has been going on for years with Dean GEORGE PACKER BERRY and trustees of the Harvard associated leading hospitals discussing the need for treatment of the whole man in one center.

Dr. EUGENE P. KENNEDY joined the Harvard Medical School faculty Sept. 1 as the Hamilton Kuhn Professor of Biological Chemistry and head of the department. Dr. Kennedy, former professor of biological chemistry at the University of Chicago, has been on leave from his former post, serving as a senior postdoctoral fellow of the National Science Foundation at Oxford University, England. He succeeds Dr. ALBERT BAIRD HASTINGS, who retired on December 31, 1958, to become a member of the Scripps Clinic and Research Foundation at La Jolla, Calif.

Jefferson

A three-year, \$84,000 U.S. Public Health Service grant, channeled through the Commonwealth, has opened career training opportunities under fellowships at Jefferson Medical College and Medical Center. The grant to Dr. PETER A. HERBUT, professor and head of the department of pathology, is for a training program in the field of cancer detection.

Fellowships worth \$1,350 at \$225 a month are open to certified medical technicians and to men or women with two years of college.

To make this training course fully available, Dr. Herbut has not set formal starting periods for new trainees. Applicants may begin training at any time.

Johns Hopkins

The first major change in medical school classes at Johns Hopkins in more than 35 years will be marked by an increased enrollment in its predoctoral program from the present 75 to 90 beginning in the fall of 1961. In disclosing the plan, MILTON S. EISENHOWER, president of the university, said completion last year of the \$5 million Basic Science Building had made it possible to expand all departments except those in anatomy and pathology. Contributions now in prospect from an anonymous donor and from foundation and federal sources are expected to underwrite the \$335,000 cost of the refurbishing. Funds to support the additional faculty needed for the plan have been promised by anonymous donors, he said.

In addition to the 320 students working toward the M.D. degree, Johns Hopkins now has about 425 postdoctoral fellows in the school. About 1,000 applications are received each year, according to the school's Dean, Dr. THOMAS B. TURNER.

Kansas

A 3-day conference on medical education "for faculty only" was held August 29-30



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at the Kansas Medical Center. Prompted by the impending consolidation of all four years of the school on the KC campus of the university (September 1962) and the resulting changes and challenges, school authorities invited seven medical educators to lecture and participate in round table discussions "to take a good hard look at the present curriculum and consider changes."

Dr. C. ARDEN MILLER, Dean, Dr. MAHLON DELP, Associate Dean, and Dr. ROBERT HUDSON, Assistant Dean, presided over the sessions.

Kentucky

LOREN D. CARLSON, former professor of physiology and biophysics at the University of Washington School of Medicine, became head of the department of physiology and biophysics at the University of Kentucky School of Medicine in July. Dr. Carlson, a member of the Washington faculty of medicine since its inception, started his career there as an instructor in zoology and became assistant professor of physiology and biophysics the following year. He was assistant dean in 1948-49 and in 1953-54. From 1949 to 1951 he served as director of the university's general-education program.

Louisiana

Three new department chairmen were named recently to the medical school faculty. Dr. THOMAS HERNANDEZ was named professor and head of the department of pharmacology. He succeeds Dr. ERNEST BUEIDING, who resigned to accept a research position at Johns Hopkins. Dr. HENRY C. MCGILL, Jr., a member of the faculty since 1947, was appointed professor and head of the pathology department. He succeeds the late Dr. RUSSELL L. HOLMAN. Dr. IRVIN CAHEN was named professor and head of the department of orthopedics. Dr. Cahen came to the university in 1938 as a teaching fellow, and has been serving as acting head of the department since September 1959.

Named professor and head of the new department was Dr. J. CLYDE SWARTZWELDER, who has been professor of parasitology in the department of microbiology since 1950. Dr. Swartzwelder is a consultant in parasitology at the VA Hospital, a visiting scientist at Charity Hospital and was formerly chief of the Field Survey Branch, Tropical Diseases Control Division, Office of the Surgeon General, U.S. Army.

Mayo Foundation

Dr. FRANK H. KRUSEN, professor of physical medicine and rehabilitation in the Graduate School and who, in 1935, founded the section of physical medicine and rehabilitation of the Mayo Clinic, was elected an honorary member of the French National Society of Physical Medicine at the last general assembly of that body, according to Dr. Marcelle Peillon of Paris, general secretary of the society.

Meharry

A recent graduate of the University of Michigan joined the department of anatomy August 1. She is Dr. ANNIE C. BUCK, who was named associate professor of anatomy.

Missouri

Dr. JACOB S. RODEN, professor and chairman of the department of obstetrics and gynecology, died suddenly July 26 in the Medical Center Hospital. Prior to joining the Missouri faculty in 1956, Dr. Roden had been in private practice in Midland, Texas.

North Carolina

The UNC School of Medicine is losing three of its faculty members for assignments abroad this fall. Dr. SIDNEY S. CHAPIN, clinical professor of pediatrics, left in August

to begin a one-year teaching assignment in Alexandria, Egypt. Sponsored by WHO, he will act as visiting professor of social pediatrics at the Higher Institute of Public Health. Dr. JOHN H. SCHWAB, assistant professor of bacteriology, has departed for England to do a year's research at the Lister Institute of Preventive Medicine in London. Dr. CARL W. GOTTSCHALK, associate professor of medicine is transferring his research relating to kidney function from Chapel Hill to the University of Copenhagen, Denmark, for a period of one year. The year's program is co-sponsored by the American Heart Association and the Public Health Service.

Northwestern

The known and supposed effects of radiation on the nervous system were reported in September at a three-day international symposium of some 300 of the world's leading scientists on Northwestern's Chicago campus. The symposium—thought to be the first of its kind in the world, brought together neurophysiologists, radiobiologists, physicists, physicians and space medicine specialists for exchange research findings and beliefs on radiation effects. Russian scientists, as well as scientists from Europe, North and South America, and Japan attended the sessions. General chairman was Dr. RAY S. SNIDER, professor of anatomy in the NU Medical School. All papers and proceedings for the three days will be published in book form later this year.

Oklahoma

Two new associate deans have been appointed at the University of Oklahoma School of Medicine. Dr. JOSEPH M. WHITE, Jr., head of the school's department of anesthesiology, was named associate dean in charge of special training and research programs. Dr. PHILIP E. SMITH, professor of preventive medicine and public health, took office August 1 as associate dean in charge of student affairs.

Dr. White succeeds Dr. KIRK T. MOSLEY, who resigned July 1 to become Oklahoma State Commissioner of Health. Dr. Smith moves into the position formerly held by Dr. A. N. TAYLOR, who resigned to join AMA's Council on Medical Education and Hospitals as an assistant secretary charged with setting up a new division on liaison with the allied health professions. Dr. Smith is also Associate Dean of the OU Graduate College.

Ground was broken this summer for a two-story, \$172,936 addition to the Speech and Hearing Clinic at the Medical Center. Facilities include new classrooms for the deaf and hard-of-hearing, speech therapy rooms, and laboratories and work rooms for graduate students in audiology and speech therapy.

Oregon

First director of the Oregon Primate Research Center, to be located near Portland, will be Dr. DONALD E. PICKERING, Doernbecher Professor of Pediatrics at the University of Oregon Medical School. Dr. Pickering and Dr. EDWARD S. WEST, chairman of the biochemistry department, are principal investigators on the grants totaling \$1,917,275 for construction of the center, which were made in April to the Medical Research Foundation by the Public Health Service. Scientists from throughout the U.S. and Canada have been participating in the development of the plans for the center. The medical school will serve as the hosting institution and will provide any academic and curricular integration required. Dr. DAVID W. E. BAIRD, Dean of the Medical School, will be administratively responsible to the board of the Medical Research Foundation for the successful operation of the center.

Pennsylvania

The appointment of Dr. HAROLD G. SCHEIE as chairman of the department of

ophthalmology was announced recently. He succeeds Dr. FRANCIS H. ADLER, who will become emeritus professor of ophthalmology after 23 years as department chairman. Dr. Scheie joined the faculty in 1940.

Dr. HAROLD S. GINSBERG, of Western Reserve University School of Medicine, was made professor and chairman of the microbiology department. He succeeds Dr. STUART MUDD, now emeritus professor of microbiology.

Pittsburgh

Dr. CECIL G. SHEPS, professor of medical and hospital administration at the Graduate School of Public Health, has been appointed chairman of a newly-created study section of the National Institutes of Health. Over-all objective of the 14-member study section is to increase the effectiveness of the organization of health services through research.

The School of Medicine recently promoted three members of its faculty to the rank of full professor. Dr. JULIUS S. YOUNGNER, to professor of microbiology; Dr. FREDERICK L. WENIGER, to professor of psychiatry, and Dr. BERTRAM R. GIRDANY, to professor of radiology.

St. Louis

Ceremonies marking the beginning of construction of the \$1 million David P. Wohl Health Institute in the St. Louis University Medical Center were held recently on the site of the Old Battery A Armory, which will be razed preparatory to start of construction of the hospital. In addition to hospital facilities, the institute will make possible an increased program in psychiatric research and training. Facilities will also be available for about 4,000 outpatient visits annually.

Seton Hall

Dr. GUSTAVE A. LAURENZI has been named to a Seton Hall professorship supported by Hudson County and state tuberculosis and health organizations. The groups

will contribute \$18,500 over a three-year period for Dr. Laurenzi's professorship in chest diseases at the College of Medicine. Dr. Laurenzi assumed duties in July as assistant professor and coordinator of the medical school's division of respiratory diseases.

Stanford

The chief of anesthesia and the director of the rehabilitation services are among new appointments to the faculty of the School of Medicine. Dr. JOHN P. BUNKER will be professor and chief of anesthesia. He is now on the staff of the Massachusetts General Hospital and assistant clinical professor of anesthesia at Harvard Medical School.

Dr. DANIEL J. FELDMAN was appointed director of the rehabilitation services and associate professor of medicine. He is now associate professor at New York University School of Medicine in the Institute of Physical Medicine and Rehabilitation.

S.U.N.Y. Upstate (Syracuse)

The Public Health Service has approved allocation of \$1,836,105 to assist in the construction of research laboratories in the university's new Teaching and Research Hospital. An additional sum of \$104,926 has been approved toward the purchase of scientific equipment in these laboratories. The research areas to be built are the fourth, fifth, sixth and seventh floors of the research laboratory wing of the hospital and will involve the departments of obstetrics and gynecology, medicine, ophthalmology, otolaryngology, pediatrics, preventive medicine, psychiatry, and surgery. Construction of the new state hospital is expected to begin next spring.

Dr. ALLEN B. DOBKIN, of the University of Saskatchewan College of Medicine, Saskatoon, Canada, has been appointed head of the department of anesthesiology. His appointment, which became effective September 1, is concurrent with the formation of the department of anesthesiology at the

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Medical College. Anesthesiology was formerly affiliated with the department of surgery.

U. of Texas (Southwestern)

A \$750,000 gift honoring the late Fort Worth oilman Dan Danciger will make possible a new \$2 million medical research center at the University of Texas Southwestern Medical School. In revealing the plans the school's president, Dr. LOGAN WILSON, said the new facility is vitally needed and will enable the medical school to attract and retain outstanding scientists. Mr. Danciger was one of the founders of the Albert Einstein School of Medicine of Yeshiva University.

Tulane

Dr. CHARLES M. NICE, Jr., professor of radiology, has been appointed chairman of the newly created department of radiology. Radiology has been a division within the department of medicine and Dr. Nice has headed the division for the past two years. According to university sources, creation of the new department was prompted by the importance of radiology in the medical curriculum as well as the competent work done by Dr. Nice. A new full-time assistant professor, Dr. JOSEPH L. IZENSTARK, has been added to the radiology faculty. The departmental status of radiology will aid further recruitment to the full-time faculty and permit expansion of the teaching and research work.

Dr. JAMES A. MILLER, Jr., has been appointed professor and chairman of the department of anatomy. He assumes the post formerly held by Dr. HAROLD CUMMINS, who reached the age of retirement a year ago. Dr. Cummins is now Assistant Dean in charge of admissions. Dr. Miller comes to Tulane from Emory University where he has been professor of anatomy since 1953.

Medical College of Virginia

The state budget office has approved a \$294,779 addition to the Brown-Seguard

laboratory building at the Medical College of Virginia. The three-story addition for a surgical research laboratory will be constructed with \$25,000 in state funds. The remainder will come from other MCV sources.

Dr. FREDERICK E. VULTEE, Jr., has been named professor and chairman of the department of physical medicine. Dr. Vultee, former associate professor at MCV, returned to Richmond from the Rehabilitation Institute of Chicago, where he has been associate director.

U. of Washington

The training program for anesthesiology was recently given departmental status by action of the board of regents and the department's first executive officer will be Dr. JOHN J. BONICA. Dr. Bonica has been director of anesthesiology at Tacoma General Hospital and Mountain View Hospital for the past 13 years. In addition to writing three books and collaborating on three others, he is the author of 71 scientific papers. Dr. Bonica has lectured on anesthesiology in every country of North and South America and Europe in recent years.

Dr. J. THOMAS GRAYSTON has been appointed professor of public health and preventive medicine, and executive officer of the department. He has headed a U.S. Navy medical research unit in Taipei, Formosa, for the past three years. During that period, he was on leave from a position as assistant professor of preventive medicine at the University of Chicago School of Medicine. Both men started their new duties September 1.

West Virginia

Dr. WILLIAM GENE KLINGBERG has been named professor and chairman of the department of pediatrics. The 43-year-old specialist in child health assumed his duties at the University Medical Center on September 1. Dr. Klingberg comes to West Virginia from Washington University School of Medicine in St. Louis, where he was associate professor of pediatrics. He is a

holder of an M.D. degree from that institution.

Wisconsin

The appointment of Professor ROBERT ROESSLER, chairman of the department of psychiatry, as Director of the Wisconsin Psychiatric Institute was recently announced by the regents of the University of Wisconsin. According to university sources, the dual appointment serves as a means of combining in effective teamwork Wisconsin's clinical, educational and research resources in the field of mental health. Dr. Roessler has been on the faculty since 1950.

Philippines

Dr. BENJAMIN BARRERA took office June 1 as the sixth Dean of the College of Medicine. He succeeds Dr. AGERICO B. M. SISON, whose term expired last May 31, in accordance with the ruling of the UP board of regents passed on October 2, 1959, limiting the term of all college Deans to five years. Aside from his duties as Dean, Dr. Barrera also still heads the department of pathology, and in view of the recent resignation of Dr. Sison, is now also head of the department of medicine in accordance with university rules.



DR. B. BARRERA

Dr. Barrera has spent several years in this country. He was Fellow of the University of the Philippines (1938-40) to the United States and worked on pathology and physiology of the glands of internal secretion at the University of Chicago (1938-39) and at the College of Physicians and Surgeons, Columbia University (1939-40). He was appointed research associate in pathology with a rank of assistant professor at the University of Chicago. He has also held a visiting professorship at Duke Uni-

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Saskatchewan

Growing appreciation of the value of applying engineering principles and techniques to the solution of medical problems is reflected in the appointment of a graduate engineer as lecturer in biomedical engineering to the College of Medicine at Saskatchewan. According to Dr. J. WENDELL MACLEOD, Dean of Medicine, the appointment follows a year and a half of successful collaboration between the faculties of medicine and engineering in analyzing a variety of technical problems and devising special instrumentation or new approaches leading to their solution. BLAINE A. HOLMLUND, who has received the appointment as lecturer in bio-

medical engineering, is also lecturer in electrical engineering at the College of Engineering. He will act as consultant to all departments of the College of Medicine and the University Hospital in the analysis of problems; will design electric, pneumatic, mechanical, or thermal control and measurement apparatus and systems and supervise their construction, installation, and testing.

Toronto

Dr. CHARLES S. HANES has been appointed head of the department of biochemistry, succeeding Dr. A. M. WYNNE, who has retired with the title professor emeritus. A Toronto graduate, with Ph.D. and Sc.D. degrees from Cambridge University, Dr. Hanes has been on the University staff since 1951.

ITEMS OF CURRENT INTEREST

AAMC To Hold 71st Annual Meeting

Examination of today's and tomorrow's medical services and medical education will dominate discussions when the Association of American Medical Colleges holds its 71st annual meeting at the Diplomat Hotel in Hollywood Beach, Florida, Oct. 30-Nov. 1. The meeting is expected to attract some 900 of the nation's leaders in medical education, industry and government as well as leaders in medicine from several foreign countries. Special invitations are in the mail to medical educators from 92 schools in Mexico and Central and South America. Interpreters will be on hand, with the necessary technical equipment, to facilitate intercommunication.

In general sessions, in sectional meetings and through panel discussions conferees will focus their attention on such major topics as: trends in financing medical education; the use of private patients in medical education; and the doctor's responsibility in a changing world. They will hear the view-

point of a drug manufacturer on matters of communicating, in more efficient methods, the latest scientific advances to the physician; and they will be apprised of the international opportunities and responsibilities facing U.S. medical schools today.

On the program are such notables as: Dr. Howard Rusk, chairman of the department of physical medicine and rehabilitation, New York University School of Medicine and associate editor, the *New York Times*; Dr. Fred C. Cole, President of Washington and Lee University; Dr. Robert S. Morison, Director for Biological and Medical Research, the Rockefeller Foundation; Dr. William A. Sodeman, Dean and professor of medicine, the Jefferson Medical College; and T. F. Davies Haines, President of Ciba Pharmaceutical Products, Inc.

England and Canada will be represented on the platform by the appearance of Dr. John Ellis, Secretary, Association for the Study of Medical Education, London, England, and former Dean of the London Hos-

pital Medical College; Dr. Thomas M. McKeown, professor of social medicine, Birmingham, England; and Drs. W. C. MacKenzie and R. A. Macbeth from the University of Alberta Faculty of Medicine, Alberta, Canada. Dr. MacKenzie is Dean and professor of surgery, and Dr. Macbeth is associate professor of surgery.

Presiding over the general sessions is Dr. Thomas H. Hunter, Dean of the University of Virginia Medical School and AAMC President.

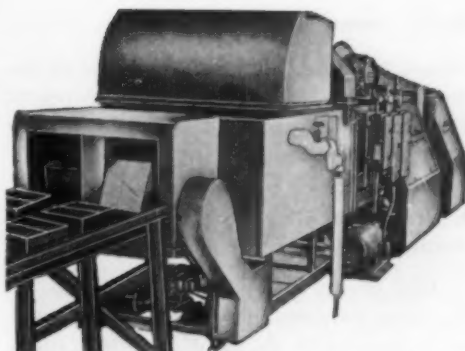
Two awards will be given during the meeting. The \$1,000 Borden Award in the Medical Sciences and the Abraham Flexner Award for outstanding service to medical education will be presented Monday evening, October 31, at the Association's annual banquet with announcement of the recipients' names at the time of presentation. Dr. Joseph T. Wearn, recently retired Vice-President for Medical Affairs, Western Reserve University, will give the Alan Gregg Memorial Lecture.

The exhibit program, the first permitted at an AAMC annual meeting, will consist of educational exhibits from medical faculty personnel, publishing and pharmaceutical houses, and also exhibits from organizations whose objectives and programs are closely related to those of the AAMC.

Preliminary programs of the meeting have gone out to all members of the AAMC. Interested persons may obtain a program, together with hotel registration cards, by writing to Association headquarters, 2530 Ridge Ave., Evanston, Ill.

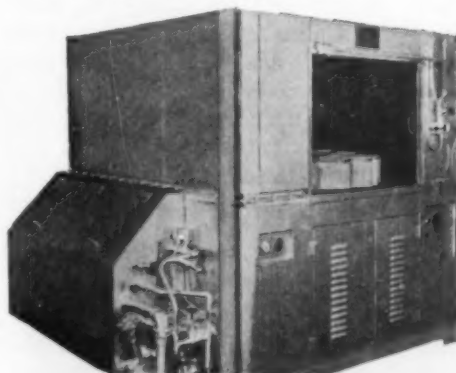
Hospital Administrators To Convene Prior to Annual Meeting

Hospital administrators and Deans participating in the Medical School-Teaching Hospital Section of the AAMC will begin registering October 28 at the Diplomat in Hollywood Beach in preparation for their meetings to be held October 29-30. Three sessions are planned and the Section will center their discussions on "The Effect of Teaching and Research on the Medical



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School Hospital." General chairman of the group is Dr. Donald J. Caseley, Medical Director of Research and Educational Hospital, the University of Illinois, Chicago.

Eighth Teaching Institute to Follow Annual Meeting

The effects on medical education of changing patterns in medical practice will be deliberated at the eighth AAMC Teaching Institute, to be held November 1-3 at Hollywood Beach, Fla. An innovation in Institute scheduling this year places the sessions immediately following the 71st annual meeting of the AAMC in order to coordinate the two programs.

"Medical Services and Medical Education—Today and Tomorrow" is the theme of the 1960 Institute, with Dr. Carlyle Jacobsen, Dean of State University of New York College of Medicine in Syracuse, serving as chairman of the 18-member planning committee. Dr. Cecil G. Sheps, professor of medical and hospital administration, University of Pittsburgh Graduate School of Public Health, and Dr. George A. Wolf, Jr., Dean, University of Vermont College of Medicine, are chairmen of the two subcommittees responsible for planning Institute content in the general areas of medical services and medical education. As in previous Institutes, the conference is an activity of the AAMC Committee on Research and Education; its administration is coordinated by Dr. Helen Hofer Gee, director of research.

Emphasis, in the general sessions and group discussions, will range around the general question of whether today's medical educational programs prepare students adequately for tomorrow's practice. Participants will explore the educational and administrative implications of forces arising out of the varieties of insurance programs which affect the access of individuals and groups to medical services; the increase of specialization and associated trends toward group practice; and the advances in physical, biological, and social sciences.

Papers presented by the speakers will be included in a published report of the Institute, which will appear in book form and also as a supplement to *The Journal of Medical Education* in October 1961.

AMA Names New Appointees

Dr. John B. Youmans has been named director of the American Medical Association's Division of Scientific Activities. He succeeds the late Dr. Edward L. Turner in directing the division created in 1959 to coordinate all scientific activities of AMA.

Dr. Youmans, former president of the AAMC, joins the AMA from his position as technical director, U.S. Army Medical Research and Development Command, Office of the Surgeon General. Now serving the AMA on a consulting basis, he expects to assume full-time duties in October.

A graduate of the Johns Hopkins School of Medicine, Dr. Youmans served as professor of medicine and Dean of Vanderbilt University School of Medicine from 1950 to 1958. He was on the Vanderbilt faculty from 1927 to 1946, when he was named Dean of the University of Illinois College of Medicine.

Dr. Glen R. Leymaster, Salt Lake City, has been appointed Associate Secretary in the Council on Medical Education and Hospitals with primary responsibility for the medical school activities of the Council. He has been associated with the University of Utah since 1948. Dr. Leymaster received the M.D. degree from Harvard Medical School in 1948 and the M.P.H. degree from Johns Hopkins University School of Public Health in 1950.

U.S. Public Health Service

NIH—principal research arm of the U.S. Public Health Service, reports that 138 research grants and 419 fellowships totaling \$4,082,506 were awarded during June 1960. Of the month's total, \$2,696,261 was allocated to support 416 new research grants and fellowship awards. The remaining amount was for the continuation of 47 pre-

vously approved research grants and the continuation of fellowships.

Surgeon General Leroy E. Burney has announced approval of 66 grants totaling \$21,987,153 to help build and equip additional health research facilities in 55 institutions in 30 states. The grants are the first to be awarded from appropriations for fiscal year 1961.

Established as a three-year program in 1956, the Health Research Facilities Program awards funds on a matching basis to public and private nonprofit hospitals, medical and dental schools, schools of public health, and other research institutions. Because of the continuing need for expansion and improvement of the Nation's facilities for medical research, the program was extended for an additional three years, through fiscal year 1962.

Thirty-three grants totaling \$842,531 have been made to investigators in 16 states and the District of Columbia to carry on research in various aspects of aging. Work will be supported in the biological, psychological, and sociological aspects of aging, including the specific fields of physiology, histochemistry, genetics and morphology.

New appointments at NIH in the Division of General Medical Sciences include: Dr. Frederick Palmer Ferguson, former professor of physiology and acting head of the department of physiology, University of Maryland School of Medicine, to Chief of the Research Fellowships Section of the Research Training Branch; Dr. Herbert Bowen Pahl, former assistant professor of biochemistry at Vanderbilt School of Medicine, to Executive Secretary of the Biochemistry Training Committee; and Dr. Carl Robert Brewer, formerly with the U.S. Army Chemical Corps Research and Development Command as chief of the Research Division to chief of the Research Grants Branch.

VA Appoints Wisconsin Educator

The appointment of Dr. Robert C. Parkin as chief of professional training service in

medical education for the Veterans Administration in Washington, D.C., was announced recently. Dr. Parkin has been assistant dean in charge of postgraduate medical education at the University of Wisconsin School of Medicine for the past 11 years.

In his new post he will help coordinate VA medical education programs which assist in training one out of each three new physicians and one out of each 10 professional nurses being produced by the nation. He succeeds Dr. Marjorie P. Wilson, who has been advanced to the newly created position of assistant director of the education service in the VA Department of Medicine and Surgery in Washington.

VA Offering Psychologist Positions

A new Civil Service examination is open for filling psychologist positions in Veterans Administration installations throughout the United States and Puerto Rico. For further information write to the Central Board of U.S. Civil Service Examiners, Veterans Administration, Washington 25, D.C.

Two Medical Educators Awarded Lifetime Research Posts

Dr. Manuel F. Morales and Dr. Oscar D. Ratnoff assumed lifetime posts as American Heart Association Career Investigators, July 1. The title assures the scientists of yearly awards for life to do research of their own choosing. They are the 8th and 9th Career Investigators named by the Heart Association during the nine years the program has been in effect.

Dr. Morales has been professor and chairman of the biochemistry department at Dartmouth Medical School and Dr. Ratnoff, associate professor of medicine at Western Reserve University School of Medicine.

T. Duckett Jones Memorial Award Announced

Dr. Rebecca C. Lancefield, member and professor of The Rockefeller Institute, New York City, is the 1960 winner of the coveted

T. Duckett Jones Memorial Award. The award is made in recognition of Dr. Lancefield's investigations of the biology of hemolytic streptococci, and the resultant discoveries. This top award, in the amount of \$6,500, is made possible each year by income from the T. Duckett Jones Memorial Fund, which is in turn matched by The Helen Hay Whitney Foundation. Dr. Jones, at the time of his death in 1954, was an internationally recognized authority on rheumatic fever and this award, honoring his memory and research objectives, is given each year for outstanding achievement in the medical field or related sciences.

National Foundation Offering Postdoctoral Fellowships

Postdoctoral fellowships are offered by The National Foundation to candidates for training in research, orthopedics, preventive medicine, arthritis and related diseases, and rehabilitation. The closing date for submitting applications to be reviewed in February is November 1.

Financial support of the Fellow varies according to his previous education, his professional experience, marital status, and number of dependents, but the minimum is \$4,500 a year with \$540 allowed annually for each dependent. Further information may be obtained by writing to The National Foundation, 800 Second Ave., New York 17, N.Y.

Applications for Research Grants

Applications for grants for medical and social research in tuberculosis and other respiratory diseases are now being accepted by the National Tuberculosis Association,

through its medical section, the American Thoracic Society. December 15 is the deadline for submission of applications for the grant year July 1, 1961, through June 30, 1962. For further information and application forms, write the Division of Research & Statistics, American Thoracic Society, 1790 Broadway, New York 19, N.Y.

Ophthalmic Research Awards Available

The National Council to Combat Blindness, Inc., announces that the closing date for receipt of completed applications for full-time research fellowships, grants-in-aid and summer student fellowships for the 1961-62 period, has been designated as March 1, 1961.

The organization was founded in 1946 with the primary purpose of financing research in ophthalmology and related sciences. The objective of its program is the ultimate reduction of blinding eye diseases and ocular disorders, through increased basic and clinical research in the field of scientific investigations. Appropriate forms may be obtained by addressing Secretary, National Council to Combat Blindness, Inc., 41 West 57th Street, New York 19, N.Y.

Navy Officer to Medical Post

Rear Adm. Walter F. James, recently retired as district medical officer, 9th Naval District, Great Lakes, is the new executive director of the International College of Surgeons.

James succeeds the late Dr. Ross T. McIntire. He has commanded several naval hospitals in the United States and Japan. He will be administrative officer for the college's 42 chapters around the world.

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DIRECTOR OF MEDICAL EDUCATION: Internal medicine specialist preferred for full-time position in 320-bed hospital. Hospital has university affiliation. Beginning salary \$18,000 per year. Address: V-91.

PSYCHIATRISTS: Geographical full-time faculty appointments available; one position open in Division of Child Psychiatry and two positions open in Division of Adult Psychiatry, University of Minnesota Medical School. Academic rank and university salary open to negotiation on basis of professional attainments. Opportunities for teaching, research and some private practice. Write to Dr. Donald W. Hastings, Box 393 Mayo Memorial Hospital, Minneapolis 14, Minn.

BIOSTATISTICIAN: Ph.D. Research in child growth studies; opportunities for varied consultation and teaching at Dental School located in large medical center; modern computing facilities available. Salary, from \$9,000 and academic rank dependent upon qualifications. Write to Dr. Bhim Savara, Head of Dept., Child Study Clinic, University of Oregon Dental School, 611 S.W. Campus Drive, Portland 1, Oregon.

PSYCHIATRIST: Full-time academic opportunity for a Board Certified psychiatrist seeking a career in teaching and research in a long established medical school in the Northeast undergoing expansion. Would direct an Out-Patient (adolescent and adult) Psychiatric Clinic team of physicians, psychologists and social workers, and teach groups of senior medical students and psychiatric residents with assistance of eight Board Certified part-time instructors. A limited amount of private practice and consultation work is allowed in addition to salary in the \$14,000-\$20,000 range; starting figure and academic rank depending upon training and experience. Write to W. L. Holt, Jr., M.D., professor of psychiatry, Albany Medical College, Albany, N.Y.

ANATOMIST: Assistant professor required for teaching gross anatomy. Excellent research opportunities in other branches of anatomy (electron-microscopy, histology, experimental pathology, tissue culture). Salary, \$7,300-\$8,500 depending on experience and qualifications. Write to R. Altschul, M.D., Department of Anatomy, University of Saskatchewan, Saskatoon, Canada.

ANATOMIST: Medical school in Midwest with excellent research facilities for neurophysiological studies. Teaching assignments in gross and neuroanatomy. Rank and salary dependent upon qualifications. Address: V-94.

MICROBIOLOGIST: The University of Alberta invites applications for the position of assistant professor in the department of medical bacteriology. Candidates should be medically qualified or possess a higher science degree. Experience in medical bacteriology or virology is useful but applicable experience in basic science fields may be as valuable. Teaching and research duties with variable amount of service responsibility depending on nature of appointment. Present salary range \$6,000-\$8,200. Applications and inquiries which should be accompanied by full curriculum vitae may be sent to the Dean, Faculty of Medicine, the University of Alberta, Edmonton, Alberta, Canada.

BIOCHEMIST: Ph.D., full-time investigation of fundamental aspects of peritonitis plus independent research. Joint academic appointment. Salary dependent upon professional experience. Department of Surgery, Louisiana State University School of Medicine, New Orleans 12, La.

ORTHOPEDIC SURGEON: Professor and head of department of orthopedics required. Full-time position with emphasis on developing research program in East Coast Medical School. Address: V-95.

PEDIATRICIAN: Full-time university appointment. For active teaching program of undergraduates and residents. Interest in teaching general pediatrics and child health; specialized interests also encouraged. Rank and salary commensurate with experience. Mail curriculum vitae to V-96.

PHARMACOLOGIST: Full-time appointment as assistant professor in department of pharmacology, Ph.D. or M.D. Salary, \$6,000 to \$8,500 according to qualifications. Interested candidates should send a complete curriculum vitae and recent photograph to Dr. M. F. Murnaghan, Professor and Head, Department of Pharmacology, University of Ottawa, Ottawa 2, Ontario, Canada.

PSYCHIATRIST: Full-time academic position as instructor or assistant professor in dynamic new department of psychiatry. Opportunities for teaching, research, and clinical experience on inpatient, outpatient, and/or consultation services. Departmental emphasis is on community psychiatry. Must have completed approved residency training. Rank and salary based on qualifications and ability. Write: Dr. James M. A. Weiss, Department of Psychiatry, University of Missouri School of Medicine, Columbia, Mo.

BIOCHEMIST: Qualified Ph.D. needed for department of pathology in Southwestern medical school. Position carries title of assistant professor with an annual salary of \$7,600. Work consists of directing clinical chemistry laboratory and setting up microtechniques in affiliated hospital. Also involves assistance in teaching clinical pathology to second-year medical students. Ample opportunity for research. Address: V-97.

INTERNIST: Full-time position available at university affiliated hospital for internist to run research-metabolic unit, conduct own research, and help with teaching house staff and students. Address: V-98.

DIRECTOR OF PROFESSIONAL SERVICES: Large affiliated VA General Hospital. Certified specialist with more than casual experience in residencies and research and a flair for administration. Faculty appointment appropriate for qualifications. Active expanding research programs. Ambitious, mature personality. Salary \$15,789-\$17,200. Address: V-99.

PSYCHIATRIST: Board certified, mature personality, Chief, Physical Medicine and Rehabilitation Service, large affiliated general VA Hospital, Southwest. Challenging residency and research programs. Qualified for professional appointment. Salary \$15,789 to \$17,200. Address: V-100.

PSYCHIATRIST-DIRECTOR: For new 39-bed adult inpatient service in 350-bed, medical school-affiliated, acute general hospital. Should be Diplomate or Board eligible. Planning resident training, research and service programs; dynamic orientation with psychotherapy as primary therapeutic approach. Excellent voluntary staff prepared to cooperate actively. Eligibility for Michigan licensure required. Position would be full-time; salary commensurate with candidate's qualifications. Write, including curriculum vitae, to Julien Priver, M.D., Director, Sinai Hospital of Detroit, 6767 W. Outer Drive, Detroit 35, Mich.

INTERNIST: Young, to serve full-time as assistant chief of service in university affiliated, all charity hospital recently opened. Faculty status. Salary \$10,000. Address inquiries to Dean, Louisiana State University School of Medicine, 1542 Tulane Avenue, New Orleans 12, La.

MEDICAL ARTIST: Full-time position for a formally-trained medical artist in a medical school serving all departments. Recent graduate preferred. Salary according to qualifications. Address: Professor J. V. Basmajian, Department of Anatomy, Queen's University, Kingston Ontario, Canada.

To aid in solution of the problem of faculty vacancies, MEDICAL EDUCATION will list persons and positions available, as a free service. The school department or person may have the option of being identified in these columns or of being assigned a key number for each position listed. Mail addressed to key numbers will be forwarded to the person or department listing the request.

Information for these columns should reach the Personnel Exchange, Journal of Medical Education, 2530 Ridge Avenue, Evanston, Illinois, not later than the 10th of the month which precedes the month in which the listings will appear.

Personnel Available

ANATOMIST: M.B., Ch.B. (Witwatersrand, Johannesburg, South Africa), F.R.C.S. (Edinburgh). Age 52, desires position in medical school as senior lecturer in anatomy. Presently located at University of The Witwatersrand as official lecturer in anatomy; part-time senior lecturer in gross and applied anatomy since 1949. Publications. Surgeon to Union Defence Forces, 1940-46 with rank of major. In private practice as a general surgeon since 1946. Address: A-428.

PHARMACOLOGIST-CLINICAL: M.D., Ph.D., age 33, licensed physician. Publications, academic and industrial experience, some psychiatric training. Desires teaching position. Address: A-430.

HUMAN GENETICIST: Ph.D., age 36, seven years experience at leading human genetics center, including heredity clinic service, population surveys of hereditary traits, and statistical analyses. Fourteen publications. Desires permanent university position, preferably research and teaching. Address: A-431.

CERTIFIED INTERNIST: Age 38, experienced in diabetes, endocrinology, radioisotopes (licensed by AEC). Several years direction of medical residency training program, and radioisotope unit in large teaching hospital, and Assistant Professor of Medicine in charge of student diabetes clinics. Now in private practice. Desires return to full-time teaching hospital and/or medical school. Address: A-433.

GROSS ANATOMIST: Ph.D. Eight years teaching experience; desires academic position in medical or dental school. Available summer 1960. Address: A-434.

PHYSIOLOGIST-BIOCHEMIST: Ph.D. Faculty member medical school. Interdisciplinary major grant research program (3 technicians) in basic and clinical aspects of endocrine physiology, metabolism, biochemistry. Publications, societies, radioisotope experience, training in statistical design. References. Desires faculty career appointment teaching physiology and/or biochemistry with facilities and climate to develop research program. Address: A-435.

INTERNIST: M.D., age 35. Currently on faculty of Eastern medical school. Experience in private practice and industrial medicine. Eight months experience and training in psychiatry. Desires faculty appointment with opportunity for clinical investigation in cardiovascular diseases, as well as teaching general medicine in teaching hospital. Address: A-436.

PHYSIOLOGIST: Ph.D., leading university. Well trained in biological, physical and chemical sciences. Highest scholastic honors, scholarships, former National Research Council Fellow. Well developed research program on the physiology of growth and aging. Offices held in national scientific societies. Present appointment, associate professor in medical college. Currently in charge of teaching. Seeking appointment with major administrative-teaching responsibilities, with opportunity to continue expanding research study, preferably in the West. Minimum entering salary \$12,000. Available Fall, 1960. Address: A-438.

PEDIATRICIAN: Professor and department head. Wishes to relocate for personal reasons. Ten years at present post. Age 43. Numerous publications. Would first consider university or educational foundation position; then, hospital educational program or industry affiliation. Address: A-439.

SURGEON: Cardiovascular and thoracic. M.D. 1947 American medical school. Presently located at Canadian hospital as research fellow in cardiovascular surgery. Desires position in thoracic and cardiovascular surgery, either at clinical level, or in teaching and research. Diplomate, American Board of Surgery. Address: A-440.

HISTOLOGIST-ENDOCRINOLOGIST: Also histochemist-electron microscopist. Age 32; Ph.D., Harvard. Publications, grants and cancer research. Six years teaching experience in histology, embryology and histochemistry. Desires associate professorship or full time research position in a medical school in department of anatomy, biochemistry, pathology or allied clinical science. Address: A-441.

INTERNIST-HEMATOLOGIST: Age 37, Board certified. Interested in all phases of clinical, laboratory, and research hematology, seeking academic position. Experience includes 6 years academic type practice in internal medicine and hematology; brief private practice; research during military service. Address: A-442.

PHYSIOLOGIST-PHARMACOLOGIST: Ph.D., 1954. Male, family. Eleven years teaching experience, currently teaching physiology in dental school. Desires academic position with or without research opportunities. Address: A-444.

ANATOMIST: M.B.B.S., University of Karachi, 1955. Four years teaching experience. Currently with anatomy department in a Pakistan medical school. Desires anatomy instructorship in medical school or university, preferably in northern United States, and opportunity to do summer graduate work. Address: A-445.

INTERNIST: Age 33; certified in medicine. Trained in clinical medicine, teaching and research at university hospital and the N.I.H. Director of medical education at university affiliated hospital in New York City for past three and one-half years. Experience in private practice and epidemiology. Desires geographic full-time position at medical school or hospital, with opportunities for teaching and research as well as consultation and limited practice privileges. Address: A-446.

PREVENTIVE MEDICINE PHYSICIAN: M.D., M.P.H. and Dr. P.H. Desires teaching position on medical school faculty. Numerous publications. Previous teaching and health department experience. Special interests are epidemiology, biostatistics, and preventive medicine. Address: A-447.

PSYCHIATRIST: Age 35; board certified, prefers geographic full-time position at level of assistant professor or higher. Presently teaching part-time as clinical instructor. Experience as hospital out-patient clinic director and director of professional education in State hospital. Established in-patient adolescent service. Married, 5 children. Five articles. Address: A-448.

BACTERIOLOGIST-IMMUNOLOGIST: Ph.D. Married, family. Eleven years experience in clinical bacteriology, serology, and blood grouping and as Director of the blood bank. Extensive teaching experience at medical school level. Publications. Desires hospital position with research potential and university faculty status. Address: A-449.

PHYSICIAN: M.Sc., M.D., age 38, presently on staff of Australian university, desires teaching position in department of medicine at American university. Trained in England and United States. Numerous publications; broad background. Speciality, cardio-vascular diseases. Address: A-450.

PEDIATRICIAN-PUBLIC HEALTH: M.D., M.P.H., Past experience includes private clinical practice, teaching preventive medicine and school health. Fellow, American Academy of Pediatrics. Desires part-time position in public or student health with academic affiliation. Address: A-451.

ADMINISTRATOR: M.D., age 36. Five and one-half years in administration of large federal medical education program and government medical research contracts. Graduate training in clinical pathology. Desires administrative post in medical school, preferably with opportunity for teaching and research. Address: A-452.

EDUCATIONAL DIRECTOR: Surgeon, with seven years' university and administrative experience as assistant professor and director of a large multi-service residency program in a Veterans Administration hospital. Position sought in a university or community hospital, full or part-time, with access to research facilities. Address: A-453.

PATHOLOGIST: Federal pathologist desires chairmanship of department or professorship of anatomic pathology in a university medical school or affiliated civilian general hospital. Currently conducting research which would continue; contributor to medical texts and journals. Availability of space, facilities, full-time personnel and opportunity to teach medical students and train residents deciding factors in accepting a position. Address: A-454.

PHYSIOLOGIST-PHARMACOLOGIST: M.S., Ph.D., age 32, married, 2 children. Nine years training and research experience in physiology and pharmacology, with specialization in cardiac electrophysiology and pharmacology.

Former National Heart Institute and American Heart Association research fellow. Desires academic, hospital, or affiliated research institute research appointment with opportunity to initiate and organize own research program in cardiovascular pharmacology and physiology. West Coast location desired. Address: A-455.

INTERNIST: M.D., age 40. Experienced in teaching, clinical investigation (metabolism), patient care, and administration. Desires full-time post with teaching hospital—medical school. Address: A-456.

EXFOLIATIVE CYTOLOGIST: M.D., with 12 years' training. University experience in teaching and research (cyto-histochemistry). Desires appointment in a university department or in cancer institute with exfoliative cytology program and opportunities for research. Address: A-457.

PHARMACOLOGIST: M.D., Ph.D., age 36, married. Seven years teaching and research experience in structure-activity-relationships. Desires academic position with facilities and atmosphere conducive to develop research program. Address: A-458.

GENERAL SURGEON: M.D., F.R.C.S.(C). Board eligible. Excellent references. Age 35. Teaching experience in anatomy, pathology and surgery. Desires association with hospital, medical school, or group with part-time teaching responsibilities. Address: A-459.

PATHOLOGIST: Age 36. Certified in clinical and anatomical pathology, presently on medical school faculty. Desires to combine service with teaching or hospital educational program. Address: A-460.

PHYSIOLOGIST: Ph.D., male, age 31, 1958 graduate with teaching experience in medical schools. Interested in academic position in medical school with research opportunities. Present rank, Assistant Professor. Currently on NIH research grant. Available fall 1961 (possibly spring 1961). Address: A-461.

INTERNIST: F.A.C.P., age 43. Consulting physician in large Eastern charity hospital desires full-time position in department of medicine at Professor of Clinical Medicine level. Primarily interested in metabolism but will consider other sections. Broad training in most subspecialties; basic experience with isotopes. Extensive clinical investigation. Numerous publications since 1947. Diplomate American Board Internal Medicine. Address: A-462.

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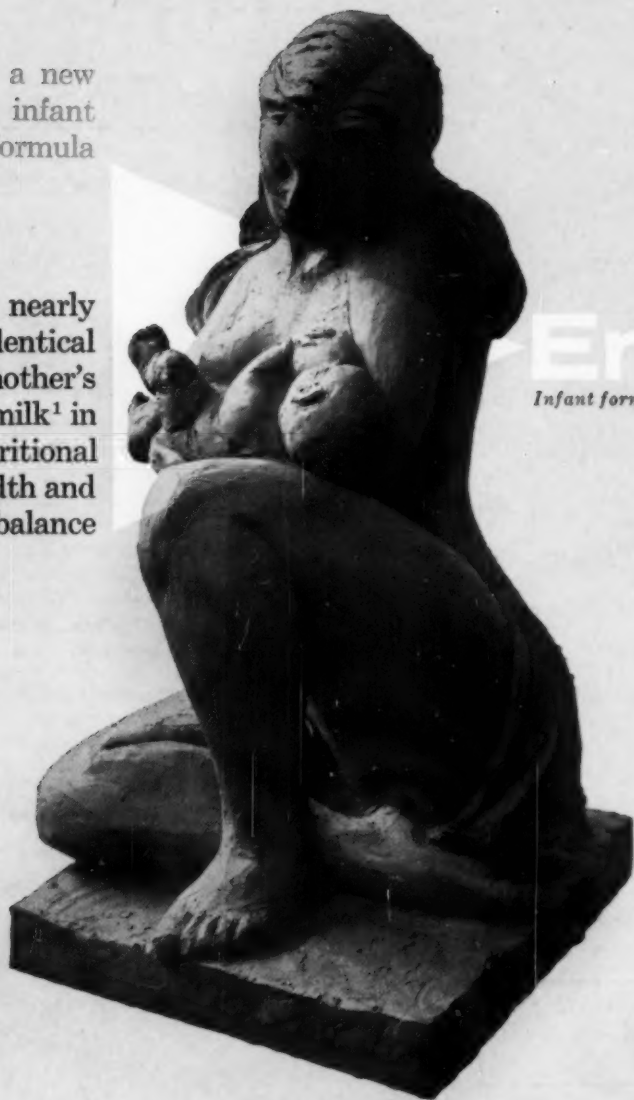
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1. Macy, I. G.; Kelly, H. J., and Sloan, R. E.: With the Consultation of the Committee on Maternal and Child Feeding of the Food and Nutrition Board, National Research Council: *The Composition of Milks*, Publication 254, National Academy of Sciences and National Research Council, Revised 1953. 2. Brown, G. W.; Tubolski, J. M.; Sauer, L. W.; Minak, L. D., and Rosenstern, I.: Evaluation of Prepared Milks in Infant Nutrition; Use of the Latin Square Technique, *J. Pediat.* **56**:391 (Mar.) 1960.



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